NEW REMEDIES.

AN ILLUSTRATED MONTHLY TRADE JOURNAL OF

MATERIA MEDICA, PHARMACY, AND THERAPEUTICS

VOL. XI., NO. 6. WHOLE NO. 96.

FRED'K A. CASTLE, M.D., - - EDITOR.
CHARLES RICE, PH.D., - ASSOCIATE EDITOR.

PUBLISHED BY

WILLIAM WOOD & CO., 56 & 58 Lafayette Place, N. Y.

JUNE, 1882.

SUBSCRIPTION PRICE, per year, - - - - - $2.00
SINGLE COPIES, - - - - - - - - - - .20

Address all communications relating to the **business** of NEW REMEDIES, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the **Editor** should be addressed to THE EDITOR OF NEW REMEDIES, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

NEW REMEDIES is issued the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location and time. Special rates on application.

ELECTROTYPES of the illustrations contained in NEW REMEDIES will be furnished for 50c. per square inch.

EDITORIAL.

The Synthesis of Quinine.

NEWS has been received by us some weeks ago, through a special correspondent at Paris, that a notice has been handed in to the President of the French Academy of Sciences, in which the successful discovery of the synthesis of quinine was announced. We have since then received the *Comptes Rendus* (hebdomadaires des séances) de l'Académie des Sciences of April 3d, in which the following letter of MR. E. J. MAUMENÉ to the President of the Academy is contained.

"The discovery of H_2N has just furnished me the means of accomplishing a synthesis longed for by all chemists, and which is the object of a prize offered by the Société d'encouragement. This synthesis is that of quinine

"I would at once communicate to the Academy the details of the very simple process by which H_2N furnishes very pure sulphate of quinine, if I did not have to apply therapeutic tests to this sulphate, all properties of which are identical with those of the sulphate prepared from cinchona bark.

"The Academy, in accepting the deposit of the sealed package accompanying this letter, will give me liberty to devote the necessary time to the therapeutic studies. I shall be grateful to it therefor."

Tuberculosis Due to Bacteria.

IT appears that a very important pathological discovery has been made, which bids fair, if fully confirmed, to considerably modify the treatment of tuberculosis in its various forms.

On March 24th, Dr. Koch, a member of the German Imperial Health Department, read a paper, accompanied by demonstrations, before the Physiological Society of Berlin, in which unmistakable proofs were offered that tuberculosis (miliary tuberculosis, cheesy pneumonia, etc.) is a bacteria disease, caused by a bacillus similar to the lepra-bacillus.

Dr. Koch had discovered a peculiar method of tinting (by methyl-violet and afterwards vesuvin), by which he could demonstrate the very characteristic, but always motionless bodies, particularly in those places where the process was freshest; they could not be so well seen in old spots (giant cells).

Dr. Koch succeeded in propagating this bacillus, outside of the animal economy, and free from all animal admixture, upon a specially prepared jelly of blood-serum. It grows very slowly; can live only at a temperature of from 30° to 42° C. (86° to 107.6° F.), and differs also in other respects considerably from other artificially propagated bacilli.

With these bacilli, artificially nursed *outside of the living body*, and propagated from one nursing glass to another during two hundred days, he made a large number of experiments, conducted under all possible precautions to exclude error, for the purpose of ascertaining whether the disease could be inoculated by means of these bacilli. These experiments were perfectly successful, both tuberculosis and also murrain of cattle (which exhibits the same bacilli as the former) being transmitted by inoculation in a characteristic and constant manner. Not only vaccination on various parts of the body, but also injection into the circulation produced acute miliary tuberculosis and, after some time, cheesy processes. Dr. Koch even succeeded, by such inoculation, to infect animals which are otherwise not subject to these diseases, namely, dogs and rats.

The announcement of these results has already made a great stir in medical circles, and we may expect to soon hear more on the subject.

The Pharmacopœia.

WE have lately had our attention called to the fact that a man is about, selling copies of the fifth revision of the Pharmacopœia of the United States of America (1870), representing it to be "the new pharmacopœia" An examination of one of the copies, bought by a pharmacist of this city under the impression that he was purchasing the sixth revision authorized by the Convention of 1880, shows that it is the fifth revision printed from badly damaged plates, and bearing the imprint "Philadelphia: J. B. Lippincott & Co., 1882."

The manuscript for the sixth revision is now in the hands of the publishers, William Wood & Co., and is being put into type as rapidly as possible. Should no delays occur, it will appear in the summer or early fall.

"Universal Poison Antidote."

So many of our exchanges have published the recommendation of M. Bellini, of Florence, that a mixture of iodine and starch be used as an universal antidote for poisons, that we are led to wonder whether the editors ever gave the subject any thought, and if so, in what way they conceive the so-called antidote to be efficacious. The publication of such a statement, as the insolubility of compounds of iodine with alkalies, would also give rise to the suspicion that the editors do not practise medicine, and never have occasion to treat syphilis or rheumatism.

Chinoline and some of its Salts.*

TARTRATE of chinoline (see above, p. 48) forms microscopic, columnar crystals, resembling in bulk the lighter salts of the cinchona alkaloids, but occupying only about one-fourth or one-fifth of the volume of the latter. It is soluble in 80 parts of water at 15° C. (59° F.), in 75 parts at 16° C. (60.8° F.), in 70 at 17.5° C. (63° F). At 16° C. it is soluble in 150 parts of 90% alcohol and in 350 parts of ether. Its taste is peculiar, somewhat burning, penetrating, and recalling that of peppermint. Its odor is faint, slightly resembling bitter almonds. It is administered in doses up to two grams (½ dram) as an antipyretic. No trace of it can be detected in the urine.

Hager directs it to be examined, for its purity, in the following manner: Place a minute sample on an object-glass, without cover, and examine it under the microscope with a magnifying power of 100 to 150 diameters. It will be seen to consist of larger and smaller, longer or shorter columnar crystals, some of which may be distinctly seen to have four or six sides, and blunt at the ends; crystals of other shapes would belong to impurities. If a sample of the salt be shaken with ether, a few drops of the ethereal liquid put upon an object-glass and allowed to evaporate, the same columnar crystals are observed, mostly crossed in

FIG. 1. FIG. 2. FIG. 3.

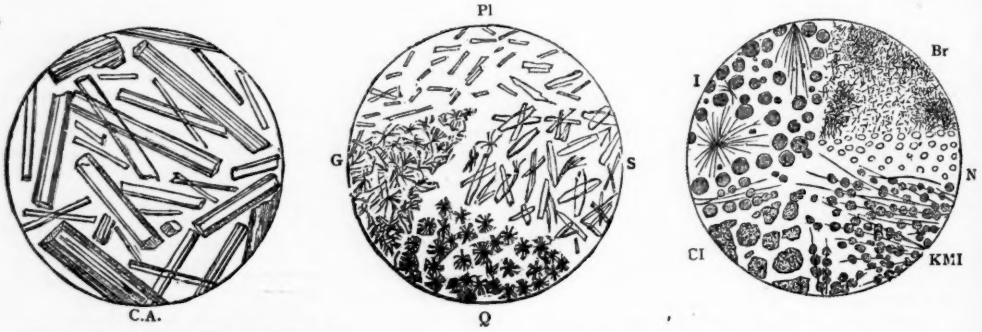


FIG. 1.—Chinoline Tartrate. Magnified 100.

FIG. 2.—Precipitates from Chinoline Tartrate: *Pl*, by platinic chloride (yellow); *G* by gold chloride (yellow): *S*, by silver nitrate, and *Q*, by mercuric chloride (white).

FIG. 3.—Precipitates (100 diam.) from Chinoline Tartrate: *I*, by iodine and iodide of potassium (brown); *Br*, by bromine and bromide of potassium (yellow); *N*, by caustic soda (amorphous drops, only in concentrated solution); *KCI*, by potassium-cadmium iodide (yellowish-white) *KMI*, by potassium-mercuric iodide (pale-yellow).

bundles. An admixture of salts of cinchonine or cinchonidine would be recognized both by a bitter taste and by the white precipitate produced in the solution by carbonate of sodium. The aqueous solution is not affected during the first six or ten minutes by permanganate of potassium, while salts of the cinchona alkaloids or tartrate of ammonium decompose the latter reagent at once. (Further reactions of chinoline see NEW REM., 1881, p. 364.) Hager finds the appearance of the crystallized salt and of the precipitates with reagents, to be as shown in the accompanying illustrations.

DR. JULIUS DONATH has published some remarks on some new salts of chinoline lately placed on the market, which may be of interest. He says (*Pharm. Zeit.*): The Chemische Fabrik auf Aktien of Berlin (formerly E. Schering) has put on the market a *salicylate* and a *paroxybenzoate* of chinoline. In spite of the possible importance of a union of two such powerful antiseptics as the base and either of these acids, it must not be forgotten that these salts are of very difficult solubility, which may be an objection to their internal administration. Salicylate of chinoline is said (*Industrie Blätter*, Vol. XVIII., No. 43) to be soluble in about 80 parts of cold water, and the paroxybenzoate in 56 parts. But the true solubilities are much less: the salicylate (Schering's make) is not yet completely soluble in 100 parts, nor the paroxybenzoate in 120 parts. Even a ten-per-cent alcohol is unable to produce a one-per-cent solution of either of these salts, although they are easily soluble in strong alcohol. If administered at all, it would seem that they should be assisted by alcoholic or acidulous liquids (lemonade, etc.); but to decide this question, clinical experiments are necessary.

* After Dr. H. Hager, in *Pharm. Centralhalle*, 1882, No. 1, and Dr. Julius Donath in *Pharmac. Zeitung*, 1882, No. 2.

Tonga.

ACCORDING to Brown, there reigns considerable confusion among botanists concerning the name of the chief source of "tonga," viz.: *Raphidophora vitiensis* Schott (nat. ord. Aroideæ), as it is identical both with *Epipremnum mirabile* Schott, and with *Raphidophora pinnata* Schott. Brown thinks it should receive the name *Epipremnum mirabile*. This aroideaceous plant appears to have a considerable distribution over tropical countries, being found upon Java, Sumatra, various Sunda-islands and Moluccas (Bali, Amboine, Timor) and in tropical Australia. It has probably also been described and illustrated by Rumphius in his Flora Amboinensis. It is well known that the commercial drug "tonga" (used as a nervous anodyne) is not exclusively composed of this plant, but contains also another, namely *Premna taitensis*.

Iodoform Bougies.

Without Glycerin.—THE hospital at Heidelberg, Germ., requires bougies containing at least 90% of iodoform, but no gelatin. These are prepared, according to K. Mueller, in the following manner. 92.5 parts of iodoform triturated with alcohol are rubbed up, in a warm mortar, with a solution of 5 parts of gum arabic, 2.5 parts of glycerin, and 2.5 parts of water, until a plastic mass results. This is formed into bougies which are rolled out between two boards; each bougie is ten centimeters long and contains about 3.5 grams. If the mass is too friable, a little water may be added. The bougies are afterward placed in a warm situation for a couple of hours, when they will be ready for use. They contain now: iodoform, 92.5; glycerin, 2.5; gum arabic, 5 parts. To avoid their flattening, during the drying, by their own weight, they should be supported along both sides by a small roll of wax paper.

With Gelatin.—Dr. Vulpius directs these to be made as follows: Dissolve 15 parts of the finest gelatin in 50 parts of water; add 7.5 parts of glycerin on a water-bath, evaporate the solution to 54 parts, and mix it intimately, by stirring, with 27 parts of iodoform triturated with alcohol. Then pour the mixture into a moderately warm mould, which is is to be immediately placed in ice-water to produce a rapid congelation, and thereby prevent the settling of the heavy iodoform. The cylinders are then dried in a warm atmosphere, until they have lost one-third of their weight.

Contribution to the Knowledge of the Alkaloids of Papaveraceæ.*

BY PROF. J. F. EYKMAN, OF TOKIO.

CONCERNING the alkaloids of the Papaveraceæ we have, at present, more or less extended researches on *Papaver somniferum* and *Rhœas*, *Chelidonium majus*, *Glaucium luteum*, *Sanguinaria canadensis* and *Eschscholtzia californica*. Probably the most study has been bestowed upon the alkaloids of opium (from *Papaver somniferum*) and we owe particularly to the grand labors of Hesse a knowledge of different series of homologues existing in opium, among which are at least fifteen well-defined alkaloids. The interesting labors of Wright, Beckett, etc., have considerably increased the number of these homologous series by the preparation of many acidoxyl-derivatives, and have furnished many clews to a knowledge of the constitution of these bases.

Much less attention has been paid to the other papaveraceous plants, and the number of alkaloids which they contain is much smaller. Besides the poisonous sanguinarine (= chelerythrine), which is characterized by the orange-red color of its salts, a second alkaloid yielding colorless salts has been met with in all these plants. Chelidonine was discovered by Godefroy in the root of *Chelidonium*, glaucopicrine in the root and glaucine in the leaves of *Glaucium luteum* by Probst; Riedel discovered in the root of *Sanguinaria* the alkaloid named by Gibb "porphyroxine," and Walz found in the *Eschscholtzia* a bitter and an acrid alkaloid. Wayne claims to have found a third alkaloid in sanguinaria root, which Gibb called puccine.

Of all all these bases, only sanguinarine and chelidonine have been somewhat carefully studied; while the data respecting the others are insufficient to properly characterize them.

Since the number of alkaloids known to exist in opium has risen to at least fifteen, it may be suspected that it merely requires a further research to find, in the other papaveraceous plants, a still greater number of alkaloids belonging to homologous series. The great difficulty of separating the latter and obtaining them pure and the fact that many supposed opium alkaloids formerly accepted have in late years turned out to be mixtures of several others, lend great probability to this suspicion.

A more detailed study of these plants is desirable and very interesting also for another reason. Namely, it is a remarkable fact that, while one and the same alkaloid (sanguinarine) has been shown to exist in all the other papaveraceous plants, it does not appear to occur in *Papaver*, and none of the substances found in opium seems to be identical with any of those extracted from other members of the family.

Hence, while sanguinarine constitutes a chemical link between most of the Papaveraceæ, no such link seems to exist between these and *Papaver*. The name porphyroxine which has been applied to two different substances, one prepared from sanguinaria and the other from opium, does not imply that these two bodies are identical; besides, one of these has since been shown to be a mixture.

The analogies which may be traced between sanguinarine and some of the alkaloids of opium,† though not at present to be depended on, at least justify the supposition that a more exact study of the papaveraceæ will show the alkaloids existing in them to be either identical or isomeric with those of opium, or to form new members of the homologous (or isologous) series.

The discovery of such alkaloids, identical or homologous with those of opium, would not only form an additional proof of the chemical relationship of papaver with the other papaveraceæ, but would also perhaps permit the employment of some of the latter for the preparation of alkaloids at present only obtainable from opium.

Following will be found the results of an investigation of *Macleya cordata*, a papaveraceous plant previously unstudied.

Macleya cordata R. Br. (*Bocconia cordata* Wild) is a native of Japan and belongs to the same sub-tribe as Sanguinaria, namely Bocconieæ. It is known in Japan as a poisonous plant and grows almost everywhere upon hills and mountains, in uncultivated spots.

The hollow stem of the (perennial) herb grows to a height of more than one meter, the leaves are up to 30 *cm.* (11¾ inches) long. On puncturing the stem, veins of leaves or fruit, an orange-yellow milky juice exudes. The small flowers are arranged in a large panicle and consist of two white sepals, many hypogynous stamens and an ovary which grows to a lancet-shaped fruit of 2 *cm.* in length and 1½ *cm.* in thickness. The seeds are small and have a red color. The root is about 5 *cm.* thick and on cross-section is seen to have a red color near the periphery. It flowers in July.

The Japanese names of the plant are numerous, varying in the different provinces. The most common are: *takenikusa*,* *tsiampangiku* and *tachiobaku*.

An assay of the root and leaves with Mayer's solution showed that they contained about the same quantity of alkaloid (0.5–1.0 per cent) as Chelidonium majus. Calculated for dry substance, the fruit appeared to contain the largest quantity of sanguinarine, the root much less and the leaves the least quantity. The other alkaloid (forming a double iodide soluble in alcohol) exists in root and leaves about in equal proportion, and is less in the fruit.

The root, of which larger quantities could be obtained, was further examined. Sanguinarine was extracted in the usual manner. The root having been exhausted with dilute sulphuric acid and alcohol, the percolate was deprived of alcohol by distillation, then supersaturated with ammonia, the precipitate—which had a dirty violet-red color, the same as the liquid portion—filtered off after a few days, and, after drying, extracted with ether until the latter no longer acquired a yellow color.

Gaseous hydrochloric acid was conducted through the clear ethereal solution, whereby a scarlet precipitate was produced which was washed with ether and was freed, by treatment with a little water, from an almost white substance which remained undissolved. The orange-red solution was again mixed with ammonia, the gray-violet precipitate extracted with ether, and gaseous HCl again conducted through the liquid. These operations were repeated several times more, and finally the ethereal solutions were decolorized by animal charcoal. In this manner a dark scarlet powder was obtained, easily soluble in water, and generally exhibiting the reactions of hydrochlorate of sanguinarine.

Mixed with a little water it melted, on the water-bath, to a dark-red syrupy liquid, which, after cooling, congealed to a crystalline mass. The dark orange-red aqueous solution yielded more or less yellow to orange colored precipitates with most metallic salts. Ferric chloride, cupric sulphate and lead acetate, however, produced no precipitate. Tannic acid, with agitation, produced a precipitate which gradually increased, particularly on addition of hydrochloric acid.

The ethereal solutions, from which the hydrochlorate of sanguinarine had been separated by hydrochloric acid gas, were freed from ether by distillation and the residue was treated with water. This left behind a brown resin (sanguinarin-resinoid?). From the filtrate the alkaloid was precipitated with ammonia, and, after drying, extracted with ether. The portion insoluble in ether was rubbed with hydrochloric acid, and the portion still remaining insoluble, together with the residue left in previous purifications of the hydrochlorate of sanguinarine, further purified by recrystallization from water. It could not, however, be obtained in a pure state, by this method, since the solutions always assumed an intense orange color on evaporation. The aqueous solution of this substance, which turned out to be the hydrochlorate of an alkaloid, was therefore

* Condensed from the pamphlet: *Beitrag zur Kenntniss der Papaveraceen-Alkaloide*. Von J. F. Eykman, Tokio. 8vo, Yokohama, 1881. Received from the author.

† These analyses are stated in detail by the author, but cannot be reproduced here for want of space.

* The plant is used in Japan for dyeing; *take* = bamboo; hence the name *take-ni-kusa* = "bamboo-boiling-herb."

treated with ammonia, the precipitate (in order to remove any still adhering sanguinarine) first extracted with ether and the insoluble portion afterwards boiled for some time with absolute alcohol. This removed a large proportion of the coloring matter and left most of the alkaloid behind. The latter was then again converted into the hydrochlorate by trituration with hydrochloric acid, and recrystallized from alcohol. The purest portion of the separated crystals was dissolved in boiling water, the alkaloid precipated by ammonia, dissolved in boiling alcohol, and precipitated by addition of ether. This treatment was continued until colorless, though small, crystals were obtained. They melted at 201° C. (uncorrected) and had the properties below mentioned.

The original grayish-black powder produced by precipitating the extracts from the root with ammonia, and which had been exhausted with ether until the latter no longer acquired a yellow tint, was percolated with alcohol. The dark-brown percolate was freed from alcohol by distillation, the residue treated with acetic acid to faintly acid reaction, and then mixed with water until nothing further was separated. The filtrate was mixed with excess of solution of iodide of potassium, the voluminous precipitate (which soon shrivelled up) filtered off and washed with water. This washing produced a white precipitate in the filtrate which was separated by a new filtration. Each of these substances, viz.: the last precipitate (*A*), the brown-colored filtrate (*B*), and the hydriodate remaining on the original filter were separately examined. The latter was first recrystallized from water, whereby a still purer hydriodate (*D*) and a fresh mother-liquor (*C*) were obtained.

A. The white precipitate produced in the filtrate by the washings was dissolved in boiling water, the solution treated with ammonia and then shaken with ether. The separated ethereal solution, on evaporation, left an almost white residue, from which ether readily separated a soluble body. The portion remaining insoluble in ether became partially soft and assumed a red color at 180° C. and was melted completely at 198° C.

B. The filtrate after removal of *A* was treated with ammonia, the precipitate separated from the liquid, dissolved to neutralization in acetic acid, and separated from a substance thereby remaining insoluble. The alkaloid was further purified by recrystallizing its oxalate from water and, after having again separated the alkaloid, recrystallizing it from chloroform. In this way large crystals were obtained, melting at 200.5° C. (uncorr.)

C. The mother-liquor of the recrystallized hydriodate. The base having been separated from it by excess of soda, it was filtered off, dissolved in boiling alcohol and crystallized by spontaneous evaporation. After purification and recrystallization from chloroform, the alkaloid had the melting point 201° C. (uncorr.)

D. The once recrystallized hydrochlorate was covered with solution of soda, set aside for one day, then the crystalline alkaloid (P) filtered off and washed. After complete purification, this was chiefly used in the further investigation of the properties, etc., of the alkaloid.

The alkaloid (P) separated from the hydriodate was boiled with strong alcohol to separate it from the accompanying brown substance; but the attempt was only partially successful. The alcohol was then poured off and chloroform added to the still moist crystalline mass.

As soon as the alkaloid had dissolved in the chloroform, two layers were formed, the upper (alcoholic) being quite dark and black, the lower (chloroformic) having only a light-brown tint and containing the alkaloid in solution. The lower layer was separated, and, after the chloroform had been distilled off, the residuary alkaloid converted into the acid oxalate which is readily soluble in hot water. From the solution the base was precipitated by soda and then boiled with absolute alcohol. The white portion remaining insoluble therein was dissolved in a little chloroform, precipitated by addition of ether and finally again recrystallized from chloroform.

In this way about 5 *gm.* of quite large, colorless, well-developed and transparent crystals were obtained. At every fractional crystallization the melting point was 200 5° to 201° C, which appears to be a satisfactory proof that the alkaloid (*macleyine*) is a pure and simple body.

Properties of the Alkaloid: Macleyine is almost insoluble in water and alkalies. On adding ammonia to an aqueous solution of the salt, and filtering, the filtrate separates after a while, wart-like crystals. It is scarcely soluble in cold, a little more soluble in boiling alcohol; also very little soluble in ether, except when freshly precipitated; very little in cold benzol, more so in boiling. Chloroform, especially when warm, dissolves it tolerably well. Macleyine has no pronounced taste, but its salts have a bitter, afterwards sharp and cooling taste.

When crystallized from chloroform or ether, or precipitated by alkalies and dried by exposure to air between blotting paper, the alkaloid is obtained anhydrous. Analysis led to the formula: $C_{20}H_{19}NO_5$. Macleyine exhibits a number of interesting reactions, which are detailed at length in the author's paper, but which we will have to omit for the present, for want of space. It was owing to these very reactions, however, and to the general properties of the alkaloid that the author was led to suspect its identity with one of the opium alkaloids, namely *protopine*, the rarest of the series. Concerning protopine the author had to follow Hesse, who alone had prepared and described the substance. The agreement of the observed properties of macleyine with those described by Hesse for protopine covered the characteristic globular or warty form of the substances when separating from ether, their solubility in different menstrua, their ultimate composition, the composition of their platinum salts, and other properties of the salts. In other respects the agreement is nearly as close as in the former, though the slight differences may be owing to accidental circumstances. The author does not claim that the identity is proven, but thinks it has been rendered highly probable.

Reduction of Chloride of Silver.

BY DR. WILH. LAGRANGE.

THE complete reduction of chloride of silver to metal may easily be accomplished by treating it with a solution of ferrous oxalate in (neutral) oxalate of potassium. This solution is digested with the chloride of silver at as high a temperature as possible, after which the reduced silver is carefully washed with water, finally under addition of a little sulphuric acid. It is then fit for all purposes.

The solution of ferrous oxalate, which is used in photography as developer of dry plates, may be prepared in various ways. For instance, by boiling ferrous sulphate with neutral oxalate of potassium, or by dissolving one part of ferrous sulphate and three parts of neutral potassium oxalate in twelve parts of water. Also in the following manner: Dissolve seventy-five parts of pure oxalic acid in four hundred parts of hot water, gradually add one hundred parts of bicarbonate of potassium and finally ten parts of finely powdered metallic iron. The whole is set aside for a few hours, being occasionally stirred, until no more hydrogen gas is given off, and the whole then filtered. The filtered solution keeps indefinitely in well-closed vessels. For technical purposes, when it is not important to insist upon chemical purity, cheaper materials may be used, as f. i. common carbonate of potassium, and commercial oxalic acid, in proportionately larger quantities.

If the chloride of silver is much contaminated by foreign impurities, it is first purified by dissolving it in a solution of hyposulphite of sodium. If now a sufficient quantity of the oxalate mixture be added, all the silver is thrown down as a finely divided precipitate, and may be allowed to settle in the well-closed flask.

The oxalate mixture may always be restored to its serviceable condition by adding to it, for every 500 *gm.* of liquid, 15 *gm.* of oxalic acid, 15 *gm.* of bicarbonate of potassium and 5 *gm.* of powdered iron; the generated hydrogen, in this case, reduces the ferric salt, which was formed, again to ferrous salt.—*Pharm. Zeit.*, No. 21.

The Estimation of Alcohol in Wine (and other Liquids) by Distillation.*

THE method of estimation by distillation was first recommended by Gay-Lussac, in 1823, and has since then been regarded as the most certain and accurate process. A few years ago, however, it was pronounced to be not quite perfect by a Committee appointed by the French Academy of Sciences to examine the ebullioscope of Malligaud. The Committee declared "that the ebullioscope furnished the best means so far known to determine the quantity of alcohol in wine." This verdict induced Maumené to subject the process of distillation to a strict examination, with a view of studying the influence of the other volatile constituents of the wine upon the accuracy of the method.

The volatile constituents, which may pass over with the alcohol during the distillation are :

1. Other alcohols, propylic, butylic, amylic, etc.
2. Ethers
3. Acetic aldehyde, and perhaps also aldehydes of the higher alcohols.
4. Volatile acids, chiefly acetic and its homologues.
5. Carbonic acid.

1. *Influence of alcohols.*—Up to the present time we possess no data regarding the quantity of alcohols other than ethylic alcohol occurring in wine. It is, however, certain that they amount to less than one-ten thousandth of the quantity of ethyl alcohol. The difference of specific gravity between the latter and the former is not great enough to permit its being used as a criterion ; in fact, direct experiments have shown that the usual accompanying impurities do not interfere with the determination of the specific gravity of the distillate from any wine.

2. *Influence of Ethers.*—According to the best estimates, the quantity of ethers is even less than that of foreign alcohols ; only one, namely, acetic ether, appears to occur in sufficient quantity to permit estimation. The specific gravity of this ether, though much above that of the alcohols (0 890 instead of 0.795) cannot influence the specific gravity of the distillate, as has been shown by direct experiment.

3. *Influence of Acetic Aldehyde.*—This has a specific gravity of 0.790 at 18° and 0.800 at 0°—almost exactly the specific gravity of ethyl alcohol ; hence, it cannot affect the specific gravity of the distillate in the minute quantity in which it is present.

4. *Influence of Volatile Acids.*—The quantity of acetic acid usually amounts to one-eighth of that of the alcohol ; sometimes it even amounts to one-fourth. The specific gravities of both are quite distant from each other, that of alcohol being 0.7947 at 15° C. (according to Gay-Lussac), that of alcohol 1.074. Hence, the determination of the alcohol in the distillate by means of specific gravity may be greatly influenced by the presence of acetic acid.

The influence of a given quantity of this acid upon the density of an alcohol of any given specific gravity may be calculated. Let us suppose, first, that the acid mixes with the alcohol without contraction or dilatation. Given an alcohol containing ten per cent of absolute alcohol. According to Gay-Lussac, the specific gravity of this liquid, at 15° C., is 0.9867; according to Pouillet, 0.9866. If we take the mean between these two, then 10 *cc.* of the liquid weigh 0.98665 grams. If we now add acetic acid in quantity of one-tenth of the alcohol ; *i. e.*, 0.1 gm., the volume of the mixture will be 10.1 *cc.*, and the weight : 9.8665 + 0.1074 = 9.9739 grams. The *specific gravity*, therefore, is $\frac{9.9739}{10.1} = 0.9875$.

According to this specific gravity, the alcoholic percentage, according to Gay-Lussac, would be 9.26 *cc.*, according Pouillet 9.25 *cc.*, while it should be 9.901 *cc.* if the increase of volume is taken into account. The acid, therefore, causes an error of 0.641 in 0.901, that is:

$$\frac{0.641}{9.901} = \frac{6.474}{100.000} \text{ or } = \frac{1}{15.447}$$

So large an error is inadmissible. If it could not be avoided, the method of distillation would have to be abandoned. Many wines of very good quality contain even larger proportions of acetic acid, ($\frac{1.5}{10}$ instead of the above $\frac{1}{10}$), whereby the error is increased still further. However, the whole of the acetic acid contained in a wine does not necessarily all pass over into the distillate, as has been assumed, for argument's sake, in the preceding statements. In general, it is impossible to say how much of the acid passes over; only one thing is certain, namely, that some of the acid still remains in the wine after two-thirds of its volume has been distilled off.

To avoid the error, it is necessary to neutralize the wine, before distillation, with a fixed alkali.

5. *Influence of Carbonic Acid.*—On heating the wine, the carbonic acid contained therein escapes and carries with it some vapor of alcohol, which may cause a small error in the determination. By previous neutralization with potassa or soda, the carbonic acid becomes fixed, and this error is thereby avoided.

Maumené also found ammonia in the wines which he examined. In one litre of must was contained 0.00604 *gm.*, and in the wine produced therefrom 0.01883 *gm.* of ammonia. As the wine, previous to distillation, should not merely be neutralized, but slightly supersaturated with an alkali, a little ammonia will generally distil over and contaminate the distillate. In exact determinations, therefore, the latter must be redistilled with a slight excess of sulphuric acid.

The process of distillation furnishes exact results, if the following two conditions are observed : 1. Distillation of the wine after addition of a fixed alkali. 2. Distillation of the first distillate after addition of sulphuric acid. If these conditions are observed, the probable error of the figure expressing the percentage of alcohol does not exceed $\frac{1}{1000}$; if only the first distillation is performed, the probable error is $\frac{1}{200}$.

For practical purposes the process is conducted as follows: 200 *cc.* of the wine are accurately measured at the normal temperature, transferred to a flask, and two-thirds of the volume distilled off. The distillate is received in a flask marked for the capacity of 200 *cc* , allowed to become cool until it is at the normal temperature, then made up with distilled water to 200 *cc.*, and again cooled to the normal temperature. Finally, the alcoholic percentage is determined by an accurate alcoholometer. Or, instead of cooling the diluted distillate twice, the following modification may be adopted. Take the temperature of the distillate immediately after dilution, then ascertain the percentage by the alcoholometer, and immediately again take the temperature. Calculate the mean temperature and find the percentage by inspection of alcohol tables.

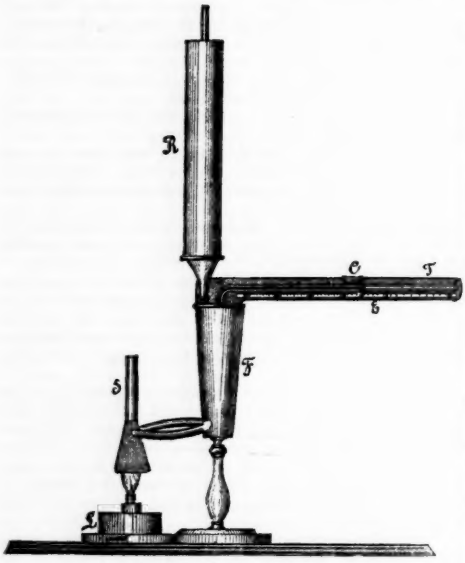
If the percentage is to be determined very exactly, Pasteur's method may be adopted: distil 200 *cc.* of the wine, collect 100 *cc.* of distillate, mix this with 50 *cc.* of lime-water and 50 *cc.* of distilled water, and again distil 100 *cc.* In this second distillate determine the alcohol by an accurate alcoholometer. One-half of the percentage found is the true percentage of the wine.

In the laboratory of the Experimental Institute for Wine and Fruit Culture at Klosterneuburg near Vienna, an exceedingly compact and convenient apparatus is used for carrying on a large number of distillations at one time. It consists of a wooden cooling box, 12 feet 4 inches long, 12½ inches wide, and 11½ inches high, which rests upon six legs on a suitable table, and the interior of which is lined with zinc. On both sides, immediately below the upper edge, are twenty-four openings connecting with tin

* From : *Mittheilungen der k. k. Chemisch-physiologischen Versuchsstation f. Wein- und Obstbau in Klosterneuburg bei Wien.* Herausgegeben von Prof. Dr. L. Roesler, Vorstand. Heft I. *Inhalt :* 1. Die Methoden der Wein-Untersuchung, mit besonderer Berücksichtigung der Verfälschungen der Weine. 2. Die Methoden der Alkoholbestimmung in weingeistigen Flüssigkeiten. 4to, Wien, 1882.

worms inside, the outlet of which passes through the bottom. In the openings, on both sides, are inserted, by means of well-fitting corks, bent glass-tubes provided with rubber-stoppers intended to be inserted into the flasks in which the wine is distilled. The interior of the box is supplied with a continuous flow of cold water.

The ebullioscope of Malligaud, which was mentioned above as being indorsed by a committee of the French Academy of Sciences, has the following construction: *F* is the boiler communicating with hollow brass-ring which passes through the chimney *S* of the alcohol lamp *L*, by means of which the liquid in the brass-ring and boiler is heated. *R* is a condenser filled with cold water. *T* is a thermometer, the vertical portion of which, with the quick-silver bulb, is cemented in the round brass-cover. The latter is screwed on the top of the boiler. The horizontal



Malligaud's Ebullioscope.

portion of the thermometer is attached to a metallic arm, likewise firmly fastened on the lid. *C* is a movable index, and *E* is a scale indicating alcoholic percentage. Before using the apparatus, it is always necessary to determine the zero point of the scale. For this purpose, the boiler *F* is filled, up to the mark, with distilled water, the cover is screwed on, and the water heated to boiling. The index is now set upon the exact end of the column of mercury, and the alcohol scale *E* adjusted so that that the zero point coincides with the end of the column of mercury (or the boiling point of water at the existing atmospheric pressure). The scale is fastened by means of a set-screw. The water is now emptied from the boiler, the latter rinsed with some of the wine (or other alcoholic liquid) to be examined, then filled up to the mark, closed, and the contents again heated to boiling. As soon as the mercury remains constant, the index is moved to this point, and the percentage of alcohol read off upon the scale.

Adulterated Oil of Cassia.

MR. H. B. PARSOTS, PH.C., informs us that he recently examined a sample of Chinese oil of cinnamon (oil of cassia), which had a low specific gravity (1.022) and contained 20% by volume of a light-yellow fixed oil insoluble in alcohol. In many respects this oil resembled expressed oil of almonds.

A New Antiseptic.

PROFESSOR BARFF who is already known as the discoverer of a process for the protection of iron, which promises to be successful, has recently turned his attention to devising a new antiseptic compound for the preservation of food. Originally he experimented with protosulphate of iron (ferrous sulphate) and soda-lime, the protoxide formed and set free absorbing all the oxygen in the vessel. Meat so treated was unaltered in appearance, but had a most unpleasant taste. The juices of the meat coming in contact with the soda formed ammonias, which gave rise to undesirable odors, and the method was abandoned. Boracic acid has long been a well-known antiseptic, but its slight solubility in water was a barrier to its employment. It became needful, therefore, to find, not a mere solvent, but some substance which might dissolve and at the same time form a definite compound with the acid. Tartaric acid and biborate of soda having been in turn neglected, glycerin naturally suggested itself as the most likely agent. It is a powerful solvent, and is a substance in which some of its hydrogen can be replaced by other bodies. Glycerin when heated readily dissolves boracic acid, and it arrests the growth of germs, but it retains an objectionable sweet taste.

Possibly new modes of experimenting may lead to the production of substitution products with boracic acid, but in the mean time admirable results have followed a novel application of glycerin to boracic acid, according to the process now detailed by the author. His researches derive additional importance from the fact that boracic acid alone has not the power of preventing decomposition, but only in chemical combination with other substances. An abstract of the professor's statement is as follows:

Fats are composed of two bodies—an organic acid or organic acids, chemically united with glyceryl, C_3H_5. Fats are therefore salts, of which the base can be replaced by another base, and a new salt produced.

The substance obtained by the action of boracic acid on glycerin is a body analogous in its composition to fats. It consists of glyceryl united with boracic acid instead of with a fatty acid. Heat 92 grams of glycerin with 62 grams of boracic acid (154 grams in all), an action takes place and steam is given off.

Heat the glycerin to a tolerably high temperature, and add the boracic acid in small quantities with frequent stirring.

At first the acid dissolves rapidly; towards the end of the operation more slowly. If the mixture be allowed to cool directly the boracic acid is all melted, a crystalline precipitate separates out. Probably chemical combination with the glyceryl has not taken place. The weight will be found to be 131 grams, and the substance has a sweet taste. Heat a second time; a crystalline precipitate separates out on cooling, and steam is freely given off. When cold the product will weigh 116 grams. As the chemical combination becomes more perfect the solubility in water is increased. Heat a third time; no crystalline precipitate separates out, but the mass when cold sets like ice—is brittle, chips readily, and the pieces are hard and dry. The boroglyceride thus formed communicates no flavor whatever to the substances to which it is added, or which are immersed in the preservative solution. In proportion as the glycerin is decomposed and chemically united with the boracic acid the sweet principle disappears. The weight is now 100 grams, being a total loss of 54 grams, corresponding to the weight of three molecules of water ($3H_2O = 54$). An equation will best explain what has taken place:

Glycerin $C_3H_5(HO)_3$ + Boric Hydrate $H_3BO_3 = C_3H_5BO_3 + 3H_2O$.

The glacial ice-like substance mentioned corresponds exactly to this formula.

The professor explains this in words for the benefit of those who are not well practised in chemical formulæ, and as the explanation is obscured by a misprint, it will be perhaps better to reprint it correctly: C_3H_5 = glyceryl, which, chemically united with 3(HO), forms $C_3H_5O_3$, or glycerin,

H_3BO_3 = boric hydrate. Under the influence of heat the H_3 from the boracic acid unites with the 3(HO) of the glycerin, forming $3H_2O$, or three molecules of water, and the BO_3 of boracic acid takes their place, forming $C_3H_5BO_3$ (boroglyceride).

The remainder of the paper is an enumeration of various cases in which the application of this glacial antiseptic had been proved to be efficacious. Prepared cream was sent to Jamaica, and pronounced to be in good condition. Devonshire clotted cream was sent to Zanzibar, passing through the hot climate of the Red Sea, and was found to have retained its freshness; and many other experiments which were attended by satisfactory results were related by the professor. He contended that the process injured neither the aroma nor the flavor of meat; the only thing requisite was to keep the containing vessel so as to exclude the air, as you would with tea or coffee. He regarded the compound as quite wholesome. The cost of the preservative solution would be under 1*s.* a gallon, and a gallon would affect an enormous quantity. As yet the exact commercial expense with regard to large quantities had not been ascertained.

As to the proportions, 1 in 20 was the strongest he had used, and 1 in 60 the weakest. For preserving meat 1 in 50 answered perfectly well—that is one pound of the compound added to fifty pounds of water. The bottle should be put before the fire until melted, and the contents poured into hot water, and the compound would dissolve. He considered that the solution would be found useful in the preservation of morbid anatomical specimens, and would be introduced with advantage into our medical museums.—After *The Chem. and Drugg.*

Refining of Camphor.*

THE refining of camphor, until within the past few years, was conducted in quite as primitive a manner as the preparation of the crude product. The chief condition of the purification of crude camphor by the old method was to secure the complete removal of water, which could only be accomplished by subliming it over freshly burned lime, when the sublimed camphor attached itself to the upper part of the sublimation chamber. For this purpose a number of glass flasks, with slightly flattened bottoms and wide necks, each capable of containing from four to six pounds, were filled about half-full with crude material, the necks were carefully freed from particles that might have attached themselves, and they were then placed upon a sand-bath (fifty or one hundred together), and the camphor was slowly sublimed and condensed in the upper part of the glass flasks. For this operation it was very important to regulate the fire. If it was allowed to become too hot, the sublimate was remelted and fell back again to the bottom of the flask; and if the heat was not great enough, the camphor sublimed in snow-like masses, in which form it was not a desirable commercial article. When the operation was finished, it was necessary to break the flasks to get at their contents, and the glass fragments had to be carefully separated from the adhering camphor by hand.

By another method of purification, which was, however, the same in principle as that just described, the sublimation was affected with the aid of iron vessels. Here the uncertainty was complete, as the operation could not be seen, although, on the other hand, the apparatus was not lost. The cover of the vessel required to be made of some material that would not rust, or to be lined with a covering of this character, in order that the product should have a commercial value. Lead-lined iron chambers have been proposed for this purpose, in which the leaden lining with adhering sublimed camphor could be withdrawn, the camphor broken off, and the lead lining returned; but the method was found to be troublesome and laborious.

Another method involved the sublimation of the camphor in a separate chamber, in which it was melted; but this was found to be attended with the difficulty that sublimates of various densities were obtained, and the resulting product was not uniform in quality.

Lately, however, a process has been devised by Mr. William Simes, a Philadelphia druggist, which differs in many essential features from those that have been described, and which is at present being worked on a large scale very successfully. With all the methods thus far described, we have seen the complete desiccation of the crude substance was the important preliminary step. In the process of Mr. Simes the object is to obtain the sublimate in the form of a finely pulverulent snowy mass, for which purpose about one-tenth per cent of water is generally added to the crude material before sublimation. The apparatus of Mr. Simes consisted of a flat iron chamber, capable of holding about two hundred pounds, which was connected by means of an iron tube with a condensing chamber eight feet long, four feet wide and four feet high, constructed of heavy plate glass, in which the sublimed camphor was collected. After an operation was finished, the apparatus was allowed to remain undisturbed over night, to become sufficiently cool, and the next day the sublimed camphor was removed and subjected in moulds to a pressure of 2,500 pounds per square inch in a hydraulic press, and the finished product obtained in small cakes highly compressed, and weighing one ounce.

As Mr. Simes felt the need of facilities for carrying on his method on a large scale, he shortly arrived at an understanding with the Pennsylvania Salt Manufacturing Company, to undertake the manufacture of compressed camphor extensively, and Mr. Bihn was called upon to construct an apparatus capable of working from 2,000 to 3,000 pounds per day.

The kind of apparatus for volatilizing the crude material gave no trouble. For this purpose he introduced a cylindrical steam boiler, twenty feet long and four feet in diameter, which was provided with the necessary openings for filling and for the escape of the volatilized camphor. The boiler is so set that it is not touched at any point by the direct fire, and to this end it rests throughout its entire length upon an arch of fire brick, and the flame is kept under complete control by means of dampers. The construction of the condensing chamber gave considerable trouble, since, on account of its size, the use of glass plates was not to be thought of. On this account, Mr. Bihn constructed the condensing chamber of leaden plates weighing six pounds to the square foot, in the same manner as those used in the lead chambers employed in the manufacture of sulphuric acid. This condensing chamber was connected with the distilling vessel by means of an iron tube fifteen inches in diameter, and the door of the condensing chamber was closed hermetically with the aid of rubber strips.

Upon the completion of this plant, including steam boiler, condensing chamber, steam engine, press, etc., the manufacture was started. Meantime, a magazine specially constructed for the purpose had been built, in which was stored crude camphor to the value of about $100,000. The magazine was provided with a double roof, in order to guard as much as possible against the very considerable loss of the material by volatilization in the summer months. In spite of this provision, however, the loss is a very considerable one. In summer, it amounts to eight per cent, during the spring and autumn it is about one-half to one per cent, while in the winter the loss is inappreciable.

Soon after the manufacture was under way, it became evident that the construction of the condensing chamber of lead plates was a failure. A stratum of camphor of about one-fourth inch thickness, which adhered firmly to the plates, was found to be strongly impregnated with lead, while that accumulating on the bottom was free from impurity. It required constant and careful attention to separate the lead-impregnated crusts falling from the roof and walls of the chamber from the pure sublimate. By an unfortunate accident, the condensing chamber and press-room, together with a portion of the machinery, were burned down; the distilling apparatus and steam engine were uninjured.

* Portion of a paper read before the German Technical Society of Philadelphia, and translated for the *Manufacturer and Builder* of New York.

In re-erecting the plant, Mr. Bihn, profiting by his former experience, constructed the condensing chamber of enameled bricks set in Portland cement, forming the arched roof and the floor of the same material. The new condensing chamber was made thirty feet long, sixteen feet wide, and eleven feet high. The chamber is strengthened with iron sheathing, the doors are of iron, and double, and the whole construction fireproof.

The operation is now conducted as follows: The distilling chamber is charged with about two tons of crude camphor, all openings carefully closed, and distillations gradually effected. The operation requires generally about fifteen hours, and usually three operations are conducted in rapid succession. The apparatus is then left undisturbed for twenty-four hours, to cool off, before the condensing chamber is opened. The snow-like masses of camphor, often twenty to twenty-four inches deep, are then removed, and either packed in barrels for sale as they are, or pressed into cakes twelve inches square and about three-quarter inch thick, in the hydraulic press under a pressure of two thousand five hundred pounds to the square inch.

The compressed cakes are then sawed with a band-saw into rectangular blocks weighing one ounce, each of which is wrapped in a paraffined paper, and thereupon packed in boxes holding various quantities. The boxes holding two pounds find the largest sale. The advantage of the compressed camphor is chiefly that it does not volatilize as rapidly as the pulverulent or granular masses obtained by the usual methods of sublimation here described.

The Solubility of Ethereal Oils in Alcohol as a Test of their Purity.

THE behavior of ethereal oils towards alcohol of certain strengths has been made the basis of several methods of testing their purity. Dr. Hager, in the *Pharmaceutische Centralhalle* of Jan. 12th, describes his own process as follows:

Mix 1 volume of ethereal oil at 16° to 18° C. (about 60° to 60.5° F.) with 2 volumes of absolute alcohol (sp. gr. 0.799). When the mixture has become clear, add diluted alcohol of the spec. grav. 0.889, containing 70.9 per cent by volume of absolute alcohol,* in small portions or in drops, until the mixture has become, after one minute, so far turbid that it only appears opalescent when agitated, without being milky. In many cases, the further addition of a drop of diluted alcohol is sufficient to render the opalescing mixture milky-white. If the opalescence, at the above-named temperature, is accompanied by flocculent particles, in the case of oil of anise, rose, and similar oils, the adulterant may be spermaceti, paraffin, or other such bodies.

If the mixture is turbid, but still translucent, more of the diluted alcohol is added, until the proper point is reached. It should be barely translucent.

This alcohol test permits the recognition of adulteration in most cases, though not always the precise adulterant. The latter must be sought for by other means.

In general, it may be stated that most of the terpenes and oil of copaiva, after being mixed with two volumes of absolute alcohol, bear only a very small addition of the diluted alcohol until they become cloudy. Oil of turpentine, and of coniferæ generally, oil of juniper and of eucalyptus, become turbid or milky-white already when mixed with one or two volumes of absolute alcohol. Since all these oils are used as adulterants, their presence interferes with the solubility of the ethereal oils in the absolute alcohol. Fatty oils, except castor oil, are likewise indicated by the test.

* This percentage, according to Hehner's tables (which are now generally accepted), corresponds to a spec. grav. of 0.8877 (nearly) or to 63.39 per cent by weight.

Alcohol of this strength may be prepared from any stronger alcohol by dividing the percentage of absolute alcohol (by weight) in the alcohol to be diluted with 63.4, and deducting 1 from the quotient. The result will be the number of parts by weight of water to be added to one part by weight of alcohol.

Benzol, alcohol, and chloroform increase the solubility of oils in the diluted alcohol; terpenes, carbon disulphide, and oil of copaiva decrease it. For instance, if oil of bergamot, after being mixed with 2 volumes of absolute alcohol, bears the addition of 5 volumes of the diluted alcohol without becoming turbid, it is probably adulterated with benzol or alcohol. If oil of mustard bears 5 to 6 volumes of the diluted alcohol, it probably contains carbon disulphide. If oil of savin yields a somewhat turbid mixture with 2 volumes of absolute alcohol, oil of turpentine may be present; and, if the mixture is clear and requires 2 to 3 vols. of the diluted alcohol to render it turbid, it is adulterated, probably with benzol or alcohol, etc.

The following list is given by Dr. Hager, with the statement that the results are based upon tests made with two or three kinds of each oil. He adds that possibly a few of the figures require further confirmation or correction.

Where *x* is quoted, the oil is completely soluble in the diluted alcohol. If the mixture of the oil with 2 vols. of absolute alcohol is turbid or milky, this is specially stated.

The figures in brackets denote the sp. gr. of the oils which were examined.

A mixture of one volume of ethereal oil and two volumes of absolute alcohol (0.799)	requires to be rendered opalescent vol. of dil. alcohol, sp. gr. 0.889.
Benzol (sol. in 9 vol. of the dil. alcohol).	
Carbon disulphide (1.272)	0.8 to 0.9
Chloroform (1.495)	10 " *x*
Nitrobenzol (oil of mirbane, 1.185)	10 " *x*
Oil of almonds, bitter (0.960)	10 " *x*
" amber, rect. (0.858)	0.3 " 0.5
" angelica root (0.898)	0.5 " 0.7
" " seed (*milky-white*).	
" anise, Russian (0.981)	1.3 " 1.5
" " very old (0.990)	10. " *x*
" " star, fresh (0.976)	0.8 " 1.0
" " " (0.979)	1.2 " 1.4
" bergamot (0.875)	1.0 " 1.3
" cade (1.005	0.05 " 0.15
" cajuput (0.920)	3.0 " 4.0
" " green (0.904)	8.0 " 10.0
" " old	5.0 " 8.0
" calamus (0.920; 0.940)	0.9 " 1.1
" cardamom (0.980)	1.5 " 2.0
" caraway (0.945)	3.0 " 5.0
" " old (0.955)	8.0 " 10.0
" " rectif. (0.903)	1.8 " 2.0
" cinnamon cassia (1.030)	2.0 " 2.5
" " Ceylon	15.0 " *x*
" cloves (1.060)	10.0 " *x*
(*Sol. in 2 vols. dil. alcohol.*)	
" copaiva (0.920)	0.3 " 0.35
" coriander (0.880)	5.0 " 10.0
" cubeb (0.945) *turbid mixture.*	
" " (0.920)	0.05 " 0.1
" curled mint (mentha crispa) (0.940)	0.8 " 1.1
" dill (0.880)	3.5 " 5.0
" eucalyptus (0.900) *milky-turbid.*	
" fennel (0.990)	0.8 " 1.1
" " very old	1.3 " 1.5
" juniper berries (0.850) *milky-turbid.*	
" juniper wood (0.860)	0.5 " 0.75
" lavender (0.890)	2.0 " 2.5
" " old (0.888)	10.0 " *x*
" lemon (0.870)	0.2 " 0.4
" " (quintessential)	4.0 " 4.2
" limetta (0.900)	0.15 " 0.3
" lemongrass (0.888)	6.0 " 10.0
" mace (0.895)	0.6 " 0.9
" marjoram (0.901)	1.5 " 2.5
" melissa (0.878)	3.0 " 3.3
" mustard, ethereal	10.0 " *x*
" neroli (0.870)	2.5 " 3.3
" orange, sweet (0.850)	0.3 " 0.5

Oil of orange, bitter (0.876)	0.35	to	0 5
" palmarosa	1.2	"	1.5
" parsley (0.950)	1.0	"	1.3
" patchouli (0.980)	0.4	"	0.5
" peppermint (0.915)	1.2	"	1.9
" " very old (0.925)	5.0	"	6.5
" rose (0.860)	0.4	"	1.2
" rosemary, French (0.894)	2.5	"	2.8
" " Ital. (0.904)	4.0	"	5.0
" rue (0.890)	4.0	"	5.0
" savin (0.898)	0.5	"	0.7
" sage (0.920)	1.5	"	1.8
" santal (0.980)	4.0	"	5.0
" sassafras (1.060)	1.7	"	1.8
" " very old (1.080)	3.5	"	4.0
" tansy (0.920)	2.0	"	2.5
" thyme (0.895)	1.0	"	1.4
" turpentine (0.890) *milky-turbid.*			
" valerian (0.970)	3.5	"	4.5
" verbena (0.895; 9.863) *milky-turbid.*			
" vetiver (0.923)	0.9	"	1.1
" wintergreen (1.158)	7.0	"	10.0
" wormseed, levant (0.920)	10.0	"	*x*
" wormwood (absinth.; 0.965)	3.5	"	5.0
" " (chenopod.; 0.960)	8.0	"	10.0
" ylang-ylang (1.009)	0.7	"	0.9

—*Pharm. Centralhalle*, 1882, No. 2.

The Estimation of Small Traces of Gold.

It is of considerable interest to geologists, as well as prospectors, to note the rocks containing mere traces of gold, and as they are very abundant, even in this State we often meet with them. There is a porous gneiss at Inwood, New York City, containing appreciable amounts of gold, sintered down from elevations in the north as placer deposits of very weak intensity, and become fixed in the rock. This origin is shown, as there was a very gentle slope through the State, and the amount of gold, probably limited to commence with, was thus widely disseminated over this incline, and there fixed by deposits above it, and came into intimate contact with the rock by infiltrating waters taking it into solution and depositing it through the mass. Fissures and basins occurring in several of the counties in northern Central New York intercepted and concentrated parts in its downward movement of the richer portions of ore, and thus gave in places the rich indications and yields. But to return to the subject.

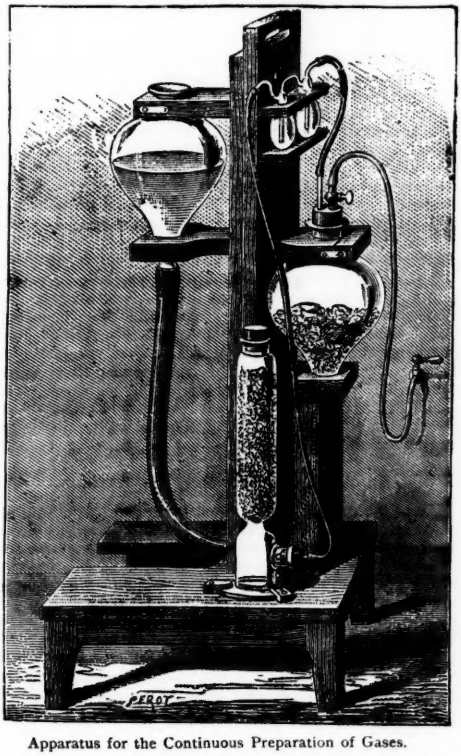
There have been a number of methods proposed to detect the minute quantities of gold occurring in the rocks mentioned above, and in ore tailings, etc., and having examined and tested every method I have known to have been suggested, I have come to the conclusion that the one noticed below yields by far the most satisfactory results if the details are well carried out, and is the most practicable in the field or in the laboratory. I know of no compound which would be formed from natural products by the method which would mislead by staining the ash a color at all similar to the distinctive purple of the finely divided gold.

Small parts are clipped from all sides of a mass of rock, amounting in all to about a quarter of an ounce. This is finely powdered in a steel mortar and well mixed. About half of it is placed in a capacious test-tube, and then partly filled with a solution made by dissolving twenty grains of iodine and thirty grains of iodide of potassium in about an ounce and a half of water. The mixture thus formed is thoroughly agitated by shaking and warming, and then, after all particles had subsided, dip a piece of pure white filter paper in it, allow it to remain for a moment, then let it drain, and dry it over the spirit lamp. It is then placed upon a piece of platinum foil held in pincers, and this heated to redness over the flame; the paper is speedily consumed, and, after heating further to burn off all carbon, it is allowed to cool, and then examined. If at all purple, gold is present in the ore, and the relative amount approximately deduced, as much, fair, little, or none. This method takes but little time, and is very trustworthy.—Nelson H. Darton in *Scientific American*.

Laboratory Apparatus for the Continuous Preparation of Gases.

We represent herewith an apparatus employed at the Municipal Laboratory of Chemistry, Paris, for the continuous preparation of such gases as are frequently made use of in chemical manipulations and analyses.

It is a Sainte-Claire Deville apparatus which certain modifications have rendered more convenient and less cumbersome. To the vertical standard there is affixed on one side a horizontal support which holds the vessel containing the solid material which is to furnish the gas (sulphuret of iron, marble, or zinc, according as sulphuretted hydrogen, carbonic acid, or hydrogen is to be prepared). This vessel is



Apparatus for the Continuous Preparation of Gases.

stationary, and is provided at the bottom with a plug pierced with holes to retain the solid particles. On the opposite side of the standard, and sliding on a rack, there is a vessel for containing the diluted hydrochloric acid. This is connected with the other vessel by means of a wide rubber tube. The vessel in which the gas is produced is closed by a rubber stopper, through which pass two tubes —one communicating with the pipe that leads the gases under the hood of the laboratory, and the other permitting of using the gas alongside of the apparatus.

The apparatus having been charged, is made to operate by raising the acid vessel and fixing it in the position shown in the figure. Here it is held stationary by the rack, and, if one of the cocks is open, the gas begins at once to be disengaged. To stop the operation of the apparatus, it is only necessary to close this same cock, when the accumulating gas will force back the acid, and all action will then cease.

When the apparatus is not to be used for a considerable length of time, the acid vessel is lowered along the rack to the base of the standard.

To change the acid when its strength has become exhausted, it is only necessary to close the cock through which the gases issue, unfasten the clasps which hold the acid vessel in its bottom and top supports, and then to invert the vessel and empty it of its contents. The vessel is then thoroughly washed with water, refilled with acid, and fixed in position again on its supports.

The Abortifacient Effects of Cotton-Root Bark.

J. C. MARTIN, M.D., of Martinsville, Ind., publishes in the *Amer. Jour. of the Med. Sciences* the results of experiments made in the Materia Medica laboratory of Jefferson Medical College on pharmacodynamics of *Gossypium herbaceum*, from which the following is abstracted:

The experiments were made with a fluid extract prepared by Mr. J. U. Lloyd, of Cincinnati, from the recent bark gathered from the roots of the living plant after it reached maturity, and just before the bolls opened. Passing over the effects on cold-blooded animals, he says, respecting its effects on impregnated rabbits: "In the first place, we wrote that the effects on warm-blooded animals possess a general resemblance to those on cold-blooded: a gradually increasing stupor, impairment of motility and sensibility, but only in the same ratio with the cerebral depressions. In the second place, the entire absence of uterine action, from even toxic doses, should be remarked. It is well known that rabbits conceive and abort with equal facility. When these experiments were going on, an impregnated rabbit, on which some experiments with picrotoxin were being performed in the laboratory by Prof. Bartholow, aborted. Much constitutional disturbance followed, and the animal died from puerperal metritis and peritonitis. That there was no change in the appearance or condition of the uterus, ovaries, and pelvic peritoneum, in any of my cases, seems conclusive against the view that this remedy possesses the power heretofore ascribed to it, of initiating or promoting uterine action."

An Australian Remedy for Asthma.

As to the correctness of the claim which has often been made on behalf of a species of *Euphorbia* indigenous to Queensland, and known scientifically as *E. pilulifera*, that it affords a remedy for asthmatic and bronchial affections, a correspondent of the Sydney *Town and Country Journal* writes to that paper that an ounce of the leaves of the plant placed in two quarts of water, and allowed to simmer till the quantity is reduced to one-half, will afford a medicine which, taken a wine-glassful at a time, twice or thrice a day, will relieve the most obstinate cases of asthma, as well as coughs and ordinary chest affections. The leaves may be easily gathered and dried, and kept for a considerable length of time. Evidence of the virtues of a decoction of the leaves of this species of *Euphorbia* is very general in Queensland and parts of New South Wales, as other kinds of *Euphorbia* have a considerable medicinal reputation in India and elsewhere. Thus the leaves of the *E. nerei folia* are prescribed as a purgative by the native practitioners in India, while the root of the *E. Ipecacuanha* is said to be equal in all respects to the true ipecacuanha. This extensive genus of plants evidently deserves the careful study of skilled botanists and druggists.—*Brit. Med. Journ.*, April 15th.

Antiseptic Use of Borax.

DR. F. T. ATKINS finds a drachm of borax to the ounce of glycerin a serviceable local application in erysipelas and suppurating sores. Respecting the former, he says that "in every case it has seemed to cut short the disease promptly, the characteristic appearances beginning to fade in a few hours." When used in an ointment, its strength he considers to be immaterial, "as long as there was plenty of borax."—*Medical Times*, March 25th. [See also p. 116.]

Selections from the Non-officinal Formulary of the Dutch Society for the Advancement of Pharmacy.*

(Continued from page 147.)

Spiritus Cochleariæ Compositus.

Compound Spirit of Cochlearia.

[Cerevisia antiscorbutica Sydenhami—Sydenham's anti-scorbutic Beer.]

	Parts.
Cochlearia, fresh flowering herb	72
Curled mint, dried and cut	6
Sage, dried and cut	6
Orange peel, dried and cut	8
Nutmeg, bruised	1
Alcohol (stronger)	36
Water	250

Macerate during one day and distil until the distillate has a specific gravity of 0.960 to 0.980.

Spiritus Melissæ Compositus.

Compound Spirit of Melissa.

	Parts.
Melissa, dried and cut	8
Lemon peel, fresh, cut	2
Nutmeg, bruised	2
Coriander, bruised	2
Cloves, bruised	1
Cinnamon, bruised	1
Alcohol	55
Water	70

Macerate during one day and distil off 72 parts. The specific gravity of the distillate should be 0.906.

Spiritus poly-aromaticus (Pharm. Belg.)

Polyaromatic Spirit.

[Fioraventi's Balsam.]

	Parts.
Cloves, bruised	1
Nutmeg, "	1
Cinnamon "	1
Ginger, "	1
Myrrh, in coarse powder	2
Galbanum, in coarse powder	2
Storax	2
Laurel berries	3
Turpentine	4
Alcohol	98
Water	334

Macerate during one day and distil off 108 parts. The specific gravity of the distillate should be 0.900.

Spiritus traumaticus. (Pharm. Neerl. I.) Wound-Spirit.

[Aqua vulneraria.]

	Parts.
Sage	1
Melissa	1
Thyme	1
Marjoram	1
Rosemary	1
Lavender	1
Alcohol	20
Water	220

Macerate during one day and distil off 75 parts. The specific gravity of the distillate should be 0.975.

Spiritus Valerianæ Compositus.

Compound Spirit of Valerian.

	Parts.
Valerian, bruised	9
Lovage seed, bruised	3
Pennyroyal, cut	2
Savin, "	1
Alcohol	35
Water	35

Macerate during one day and distil off 30 parts.

* See original title in our January number, page 10.

Spiritus vulnerarius Ricordi. Ricord's Wound-Spirit.

	Parts.
Thyme, common (Th. vulgaris)	1
Origanum	1
Melissa	1
Peppermint	1
Marjoram	1
Rosemary	1
Sage	1
Wild thyme (Th. Serpyllum)	1
Hyssop	1
Wormwood	1
Rue	1
Tansy, in seed	1
Chamomile, Roman	1
Lavender	1
Alcohol	48

Macerate during one day and distil until the distillate has a specific gravity of 0.873.

Spongia cerata. Waxed Sponge.

Dip soft, fine sponges, cleaned by beating and washing, and afterward dried, into melted wax.

When they are thoroughly soaked, press them between warm plates.

Spongia præparata. Prepared Sponge.

Wrap soft, fine sponges, cleaned by beating and washing, while still moist, with twine, so that the turns of the latter touch each other and the sponge be reduced to its smallest possible volume. Fasten the ends and let the compressed sponge dry.

Potassii Sulphovinas. Sulphovinate of Potassium.

[Æthylsulphate of Potassium. Kali sulphovinicum. Sulphas æthylico-kalicus.]

Sulphuric acid	1 part.
Absolute alcohol	1 "
Distilled water	4 parts.
Carbonate of barium	q. s.
Carbonate of potassium	q. s.

Mix the sulphuric acid and absolute alcohol gradually, and taking care that the temperature does not rise above 50° C. (122° F.). Let the mixture stand for four days at a temperature of 20°–25° C. (68°–77° F.), then dilute it with the distilled water, and add to it a sufficient quantity of carbonate of barium to render the mixture neutral. Filter the liquid, and add to it, under the application of a very gentle heat, enough carbonate of potassium to render the reaction faintly alkaline. Filter the liquid from the precipitated carbonate of barium, and evaporate the filtrate, at a temperature not exceeding 80° C. (176° F.) to the point of crystallization.

Clear crystals, easily soluble in water, deliquescent on exposure to air, decomposing at 120° C. into alcohol and acid sulphate of potassium, and yielding acetic ether when heated with anhydrous acetate of potassium.

The aqueous solution of the salt should not be rendered turbid by sulphuric acid, and should be rendered not more than faintly opalescent by solution of barium chloride.

Cupri Sulphas in Bacillis. Sulphate of Copper in Sticks.

Heat crystallized sulphate of copper until it has become completely anhydrous, and rub the dry salt to a fine powder. Press or ram the powder into small cylindrical moulds made of filtering paper, about 8 *cm.* (3¼ inch.) long, and 7 *mm.* (about ¼ inch.) in diameter, and after having closed them, put them for one or two days in a damp place. Finally remove the casing of filtering paper.

Ferri Tersulphas. Tersulphate of Iron (dry).

[Ferric Sulphate.]

	Parts.
Sulphate of iron (ferrous)	256
Distilled water	256
Sulphuric acid	47
Nitric acid	sufficient, or about 67

Dissolve the sulphate of iron in the distilled water, heat the solution, and add to it the sulphuric acid. Then gradually drop into it nitric acid as long as nitrous vapors are given off [or until a drop of the liquid, diluted with water, ceases to give a blue precipitate with ferricyanide of potassium].

Evaporate the clear solution on a water-bath to dryness.

The product is a white powder difficultly soluble in water.

Syrupus Ætheris. Syrup of Ether.

	Parts.
Ether, stronger	1
Alcohol, stronger	1
Syrup	15

Mix the ether with the alcohol, then add the syrup, and mix by agitation.

Syrupus Ferri Bromidi. Syrup of Bromide of Iron.

	Parts.
Iron, in powder	1
Bromine	2
Sugar	15
Distilled water	q. s.

Put the iron into a flask, pour upon it 10 parts of distilled water, and add to it the bromine in small quantities at a time, and under constant agitation. Filter the light-green liquid into a flask containing the sugar, and wash the filter with sufficient distilled water to make the contents of the flask weigh 27 parts. Finally dissolve the sugar by agitation, and preserve it in small well-closed vials.

The syrup has a light-green color, and contains 10% of ferrous bromide.

Syrupus Codeinæ. Syrup of Codeine.

	Parts.
Codeine	1
Alcohol	5
Syrup	494
	500

Dissolve the codeine in the alcohol and add the syrup.

Syrupus depurativus (Larrey). Larrey's "Purifying Syrup."

	Parts.
Sarsaparilla, cut and bruised	200
Guaiac wood, rasped	50
China root (Smilax China), in coarse powder	5
Sassafras, rasped	5
Senna	6
Borage (Borago officinalis)	6
Elder juice (inspissated)	40
Molasses	500
Sugar	500
Water	q. s.

Boil the sarsaparilla, guaiac wood, and China root for half an hour with enough water so that 720 parts of liquid may be separated from the dregs. Add to this liquid the sassafras, senna, and borage; let it macerate for half an hour, and strain. Then mix the strained liquid, which should amount to 700 parts, with the other ingredients.

Syrupus Eucalypti. Syrup of Eucalyptus.

	Parts.
Eucalyptus leaves	5
Sugar	20
Water	q. s.

Pour 50 parts of boiling water upon the eucalyptus, let it macerate for one hour, then strain and express.

For every twelve parts of liquid so obtained, add twenty parts of sugar and dissolve.

Syrupus Fuci Vesiculosi. Syrup of Seawrack.

	Parts.
Extract of seawrack	1
Water	1
Syrup	7

Dissolve the extract in the water and add the syrup.

The extract is prepared as follows:

Extractum Fuci Vesiculosi. Extract of Seawrack.

	Parts.
Seawrack, dried and in coarse powder	1
Alcohol (stronger)	3
Water	q. s.

Macerate the seawrack with two parts of alcohol and three parts of water during three days, occasionally agitating. Express and treat the residue again, during one day, in the same manner, with one part of alcohol and two parts of water. Again express, unite and filter the liquids and evaporate them, on a water-bath, to a dry extract.

Preserve it in a well-stopped bottle.

Extractum Fuliginis. Extract of Soot.

	Parts.
Soot, obtained by the burning of wood or peat	1
Boiling water	2
Alcohol	2

Mix the soot with the boiling water, let it stand for one day, occasionally stirring, express, and filter the liquid. Treat the residue in the same manner with the alcohol. Unite the liquids and evaporate them, on the water-bath, to a dry extract.

Syrupus Chlorali[i]. Syrup of Chloral.

	Parts.
Chloral hydrate	16
Distilled water	24
Syrup	200
Oil of curled mint	0.1

Dissolve the chloral in the distilled water, add the solution to the syrup, and finally add the oil.

[If the parts are taken in *grams, one drop* of the oil is sufficient. Oil of peppermint will answer equally well.]

Syrupus Ferri Hypophosphitis.
Syrup of Hypophosphite of Iron.
[Syrup of Ferrous Hypophosphite.]

	Parts.
Hypophosphite of calcium	30
Sulphate of iron (ferrous)	47
Sugar	600
Distilled water	q. s.

Dissolve the hypophosphite in 300 parts of distilled water and the sulphate of iron in 100 parts of distilled water. Mix the two solutions, let the mixture stand for one hour, occasionally stirring, then filter.

To every 370 parts of the filtrate add 600 parts of sugar and dissolve.

Keep the syrup in a cool place.

Syrupus Calcii Iodidi. Syrup of Iodide of Calcium.

	Parts.
Lime	5
Iodine	2
Sugar	200
Water	q. s.

Triturate the lime to a fine powder with the sugar and gradually add 100 parts of water. Let the mixture stand for several hours, occasionally stirring, then filter.

To the filtered liquid add the iodine, and when this is dissolved, 170 parts of sugar. Dissolve the latter without heat.

The syrup is clear and colorless and should be preserved in a well-stoppered bottle.

Syrupus Ipecacuanhæ Stibiatus.
Antimonial Wine of Ipecac.

	Parts.
Tartrate of antimony and potassium	3
Tincture of ipecac (1 : 10)	100
Syrup	2,000
Water	q. s.

Dissolve the tartrate of antimony and potassium in a little water; add the solution to the tincture and syrup contained in an evaporating dish, and evaporate, on a water-bath, until the product weighs 2,000 parts.

Syrupus Juglandis. Syrup of Butternut Leaves.

	Parts.
Extract of butternut leaves	1
Syrup	60

Dissolve the extract in the syrup.

Syrupus Juglandis Compositus.
Compound Syrup of Butternut Leaves.
[Vanier's Antirhachitic Syrup.]

	Parts.
Extract of butternut leaves	4
" brown (gray) cinchona	2
Alcohol	4
Port wine	6
Syrup	180
Iodide of potassium	1
Oil-sugar of anise (one part of oil and fifty parts of sugar)	3

Mix the extracts with the alcohol, port wine, and ten parts of syrup. Dissolve the iodide of potassium and the oil-sugar of anise in 170 parts of syrup and mix the two liquids.

Syrupus Juglandis Compositus cum Oleo Morrhuæ.
Compound Syrup of Butternut Leaves with Cod-liver Oil.

	Parts.
Compound syrup of butternut leaves	19
Cod-liver oil	1

Mix them.

Syrupus Lactucarii. Syrup of Lactucarium.

	Parts.
Lactucarium	1
Sugar	q. s.
Water	q. s.

Rub the lactucarium with a little sugar and 180 parts of water; then heat to boiling and filter the liquid.

In ten parts of the liquid dissolve nineteen parts of sugar.

Syrupus Lenitivus. Lenitive Syrup.

	Parts.
Hydrochlorate of morphine	1
Cherry-laurel water	100
Syrup	3,839
Tincture of cochineal (1 : 8)	60
	4,000

Dissolve the hydrochlorate of morphine in the cherry-laurel water and mix the solution with the other ingredients.

Syrupus Mannæ. Syrup of Manna.

	Parts.
Manna	3
Sugar	16
Water	12

Dissolve the manna and sugar in the water and strain.

Syrupus Mannæ Compositus.
Compound Syrup of Manna.
[Syrupus Sennæ Compositus. Syrup of Senna and Manna.]

	Parts.
Senna	24
Fennel	3
Manna	50
Sugar	200
Water	q. s.

Pour 100 parts of boiling water upon the senna and fennel, allow to macerate half an hour, then strain and pass enough water through the strainer to obtain 108 parts of liquid. In this dissolve the manna and sugar. Finally strain.

Syrupus Ferri Oxidi. Syrup of Oxide of Iron.

	Parts.
Solution of chloride of iron (ferric), spec. grav. 1.480–1.484	12
Water of ammonia	14
Sugar	85
Distilled water	q. s.

Mix the solution of chloride of iron with 120 parts of distilled water. Add to it slowly, under constant stirring, the water of ammonia previously diluted with 140 parts of distilled water. Collect the precipitate, wash it with distilled water until it ceases to produce a cloudiness in test-solution of nitrate of silver, and mix it with the sugar in a porcelain capsule. Warm the mixture for a few hours on the water-bath, occasionally stirring, then boil it gently, with occasional addition of distilled water, until one drop diluted with distilled water yields a clear, light-brown solution. Then dilute the syrup with warm distilled water until it weighs 136 parts.

Preserve the syrup in well-stopped bottles in a dark place.

One part of the syrup diluted with five parts of water should not produce a precipitate.

Fifty parts of the syrup contain one part of ferric oxide.

Syrupus Calcii Phosphatis.

Syrup of Phosphate of Calcium.

	Parts.
Phosphate of calcium	1
Phosphoric acid	3
Syrup	q.s.

Digest the phosphate of calcium with 6 parts of syrup and the phosphoric acid on the water-bath, occasionally stirring until the salt is dissolved; then add 400 parts of syrup.

Syrupus Rhamni Cathartici. Syrup of Buckthorn.

	Parts.
Juice of buckthorn berries, fermented and clarified	8
Sugar	15

Dissolve the sugar in the juice.

Quiniæ Tannas neuter. Neutral Tannate of Quinine.

	Parts.
Sulphate of quinine	1
Diluted sulphuric acid, about	1
Tannic acid	4
Solution of acetate of ammonium	3
Distilled water	q. s.

Dissolve the sulphate of quinine in 70 parts of distilled water, with the aid of diluted sulphuric acid, avoiding an excess. Add to the solution the tannic acid, previously dissolved in 100 parts of distilled water, and afterwards the solution of acetate of ammonium, previously diluted with 8 parts of distilled water.

[The solution of acetate of ammonium is prepared by saturating water of ammonia (spec. gr. 0.956–0.960) with acetic acid (spec. gr. 1.051–1.055), about 9 parts of the latter being required for 10 parts of the former.]

Let the mixture stand for five hours, occasionally stirring. Collect the precipitate upon a filter, and wash it with small quantities of distilled water successively poured on, until a little of the precipitate removed from the filter, and dried, ceases to have a bitter taste. Then dry it by exposure to air, and rub it to powder.

The resulting tannate of quinine is a yellowish-white, odorless, and almost tasteless powder, containing 8 to 10 per cent of water, and which should yield 19 to 21 per cent of anhydrous quinine, when it is assayed by the following process:

Mix 1 part of tannate of quinine, in a test-tube, with 10 parts of solution of soda (of 6%), and warm the mixture on the water-bath for fifteen minutes. Add to it, when cold, 30 parts of chloroform, shake well, and transfer the whole to a separating funnel. As soon as the chloroform has become clear, let 15 parts of it run out and evaporate this portion upon the water-bath to dryness. Then weigh the residue.

This residue, corresponding to a quantity of anhydrous quinine contained in one-half part of the tannate, when dissolved in a little water acidulated with sulphuric acid, then treated with 2 parts of ether and an excess of ammonia, should yield a clear liquid separating into two layers.

Desiccating Case.

On taking them from the stoves, the different vessels and capsules containing matters to be weighed cannot be put directly on the scales; they must first be allowed to cool in dry air. For this purpose, they are put into a desiccating case. This is a sort of small glazed cupboard, carefully closed, and divided into two equal parts. In each of the latter is placed a porcelain vessel filled with pumice stone, saturated with sulphuric acid. The capsules are placed on a metallic plate pierced with holes, or on glass shelving. The doors of the case are lined with small bands of rubber, thus rendering them as hermetical as possible.

Desiccating Case.

Colored Fires.

In consequence of some accidents which have lately happened, Mr. Sailer, of Altstaetten, Switzerland, advises to dispense with mixtures containing chlorate of potassium and sulphur altogether, or at least to use them only with the greatest care, and only when needed. Traces of sulphuric acid adhering to the sulphur may start an explosion; mixtures containing nitrate of strontium alongside of sulphur and chlorate of potassium are also very risky, and should not be kept in stock. Mr. Sailer recommends the following mixtures as absolutely safe. He states that they do not produce quite as handsome a light as those which contain sulphur, but are still quite satisfactory, besides having the advantage of burning without much smoke and poisonous vapors:

Red:	Shellac	1 part.
	Nitrate of strontium	5 parts.
Yellow:	Nitrate of sodium, pure and dry	1 part.
	Shellac	4 parts.
Green:	Shellac	1 part.
	Nitrate of barium	5 parts.

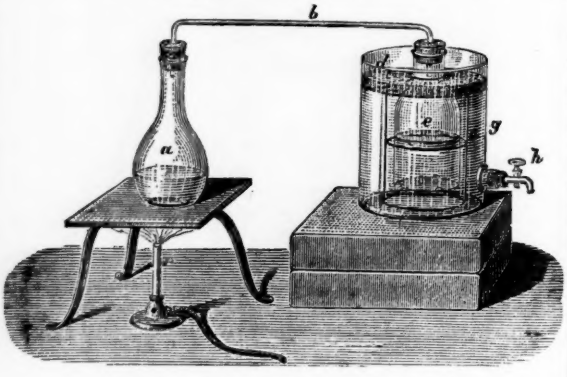
The shellac is fused with the color-producing salt, which must be *chemically pure*, and the resulting mass preserved in tight tin boxes.—*Schweiz. Wochenschr. f. Pharm.*

Decoloring Reddened Carbolic Acid.

Yvon has recommended to the *Société de Pharmacie* an apparently very simple means of freeing carbolic acid from the coloring substance which it frequently contains. It is only necessary to dissolve the carbolic acid in its own weight of glycerin. The resulting solution may be mixed with water in all proportions. If it be allowed to stand at rest, a more or less thick layer collects on the surface, which contains the whole of the coloring matter. It may be separated by decanting or by filtering through cotton.

Apparatus for the Determination of Ammonia by Distillation.

DR. O. KNUBLAUCH describes (in the *Zeitschrift für Analyt. Chemie*, 1882, 161) a simple apparatus for the determination of ammonia by distillation, which, from the description, as well as the accompanying analytical data, appears to surpass in simplicity and efficiency all previous ones. It consists of a flask *a*, of a capacity of 200 to 250 *cc.*, connected by means of the doubly bent glass-tube *b* with the absorbing vessel *c*, placed within the cooler *g*. The latter differs considerably from the usual form of these vessels. The glass-tube *b* passes through a rubber-stopper in the neck of the cylinder *e*, which has no bottom, and the lower edge of which is bulged upwards and outwards in several places, so as to permit the gas-bubbles an easier escape into the surrounding liquid. The diameter of the lower part of the cylinder is about 1⅝ inches. Around the neck of *e* is attached a disc of cork which may be set by means of a wedge, and which is so adjusted that the lower edge of *e* is only a few millimeters distant from the bottom of the absorbing vessel. The vessel *g*, within which the apparatus is placed, is filled with cold water;



Knublauch's Apparatus for Ammonia Determination.

the latter may be drawn off at any time through the faucet and replaced by a fresh supply.

The flask *a* is charged with about 25 *cc.* of the ammoniacal liquid to be assayed. If it be a salt of ammonium, the solution is mixed with a slight excess of potassa. The absorbing vessel is charged with a quantity of standard sulphuric acid, more than sufficient to combine with all the ammonia capable of being generated, and the excess of acid left unneutralized is afterwards titrated back with standard alkali. The analytical results obtained by the author leave nothing to be desired.

Iodoform in Toothache.

SCHAFF recommends iodoform, on account of its gently caustic action, as an anodyne application to exposed tooth-nerves. The circumstance that a single or repeated application of iodoform does not produce any irritation, much less any inflammation of the periosteum, and the double function of the remedy as a cleansing and disinfecting agent, make it especially appropriate as a caustic, particularly before the introduction of a temporary filling. The author uses a paste consisting of

Iodoform, powd.....	grs. 60.
Kaolin	" 60.
Carbolic acid.....	" 8.
Glycerin	q. s.
Oil of peppermint.....	gtt. 10.

Triturate the iodoform, kaolin, and oil of peppermint with enough glycerin to form a thick paste.—*Deutsch. Med. Zeit.*, No. 12.

Semi-Annual Commercial Report on Drugs and Chemicals.

(FROM THE APRIL "HANDELSBERICHT" OF GEHE & CO., DRESDEN.)

Acacia.—In consequence of the large arrivals of gum arabic from their places of collection, the price was constantly very depressed. Australian, East-Indian and Mogadore gums were particularly so, and caused a reflex action upon the Levant gums. Gum senegal alone advance a little in price, owing to the diminution in the quantity collected.

Acetone.—This liquid, which was formerly in some use for the preparation of certain varnishes, is now again in some demand, being used *in the manufacture of iodoform*, as it insures a larger yield. It is expected that the substance will find further technical employment.

Aloes.—The continued irregularity in shipments from the Cape Colony caused frequent shortage in the supply of cape aloes, and a higher price. Occasionally the latter relaxed a little, but present stocks are quite scant, and new supplies will arrive only late in the season, owing to the continued drought in South Africa.

Apomorphine.—The hypodermic use of this alkaloid is constantly increasing; the crystalline modification is now almost exclusively demanded.

Atropine has again fallen in price, owing to improved processes of preparation and also to increased production. Besides, the belladonna roots of the last few years afforded a larger yield than formerly. Should the percentage of the alkaloid in the root again decrease, the price of the alkaloid would at once advance. The problem of an artificial preparation of atropine has but little chance of success at present.

Balsam of Peru.—Prices having been rather high all the year, towards the end of 1881 the condition of things became critical. Shipments ceased almost entirely; it was said that the trees had been badly injured by the Indians during the last harvest, to increase the yield so long as the price was high. The exports from San Salvador (the only place where balsam of Peru is obtained) amounted to only 11,332 pounds Spanish weight (about 5,000 kilos) from October, 1881, to January, 1882; of this quantity 1,100 pounds were for New York; the remainder for London, Hamburg, and Bremen. A fall in price will not be possible until larger stocks arrive, which is hoped to happen during the summer. The following synopsis shows the oscillations between highest and lowest price during the last seventeen years:

	Marks:		Marks:
1865.	11.20–11.60.	1874.	18.00–19.75.
1866.	11.80–13.20.	1875.	14.50–16.50.
1867.	13.20–20 20.	1876.	12.00–14.00.
1868.	21.00–26.00.	1877.	11.75–12.00.
1869.	27.00–28.00.	1878.	10.75–11.50.
1870.	21.00–25.00.	1879.	10.75–18.00.
1871.	23.00–23.00.	1880.	19.00–24.00.
1872.	23.00–24.00.	1881.	21.50–28.00.
1873.	20 50–22.50.		

1882: January, 30 *m.*; February, 33 *m.*; March, 36 *m.*

Benzoic Acid.—The natural product from benzoin has found increased demand. The artificial acid, made from toluol, still more so, and it would seem to be actually the fact (what has been surmised by some authorities) that the few per cent of accompanying impurities have a share in the successful action of the acid. The substance has been, so far, extremely cheap, since it was obtained as a secondary (waste-) product in the manufacture of artificial indigo by Baeyer's process. Lately, however, another method has been adopted for the latter, as the former furnished an unsatisfactory yield, and it will therefore cease to be a waste product. Manufacturers already decline to quote prices for it, and it will probably not be long before it will advance in price, unless its process of manufacture could be simplified and cheapened. Owing to the competition of this acid, the variety obtained from urine has fallen about twenty per cent in value; a few manufacturers have

already stopped working and others are said to follow suit.

Benzoin.—Abundant stocks and new arrivals, mostly by way of Holland, afforded a good selection in Sumatra benzoin at slowly falling prices. Siam benzoin has advanced considerably, and it is evident that this kind could not be used for the manufacture of benzoic acid. The latter is now made exclusively from Palambang benzoin which is brought to England in handsome light-brown masses, honestly packed and in abundant quantity.

Camphor.—The imports in London amounted, in 1881, to only 8,193 colli, against 11,254 in 1880, and 13,778 in 1879. The demands of the Hamburg refineries were chiefly filled by direct importations from China and Japan. Particularly large quantities were taken to New York, and the American refined camphor in small pressed cakes has run considerable competition with the English product: it has not yet met with much demand in Germany.

Cassia, while hardly profitable to the importers, has at least been free from much variation in price, during the past year. Although stocks had considerably decreased in the chief depots, compared with the preceding year, they still appear extremely high (about 95,000 chests in London, about 17,000 chests in Hamburg); an advance in price is, therefore, not likely to take place. The following quantities were shipped from China in 1881: 6,369 piculs to the United States; 20,921 piculs to London; 10,205 piculs to Hamburg; 9,450 piculs to India.

Cinchona.—No article equals cinchona bark in the amount of excitement produced upon those interested in it. Often though we have had to report surprising conjunctures and unexpected price-variations of this drug, there never has been such a surprising turn of affairs as the advance set in motion about the middle of last December. Owing to a feeble demand, a large surplus stock in the United States and a previously unknown amount of stock in London—about 50,000 colli—the price of bark rose in a few days by about fifty per cent, and with it, of course, also that of quinine. While it was generally the product (quinine) heretofore, or the greater or lesser demand for it, which determined the condition of the market for the bark (manufacturers' bark), it was the latter, this time, which started the movement. In our last report we mentioned the remarkable stability of the price of quinine, and its brisk demand, after the supply of which a return to lower and more normal prices could reasonably be expected. Indeed, the enormous arrivals of cinchona bark in London, amounting to not less than 65,000 colli between July and December, 1881, did not fail to produce a depression. A few failures in New York, about this time, were ascribed to unlucky speculations in quinine, and it was supposed that the latter might reach the lowest value which had been attained during the last decennium.

Suddenly, however, there came a surprise: a large, (during the last years probably the largest) London importer of barks, who concentrated in his hands particularly the important Cuprea bark, bought up all cinchona barks which he could get hold of in London, raised the demands of holders by the acquisition of about 10,000 colli about fifty per cent, and, by large purchases in Paris, New York, and Germany, drove up the value to such a degree that at the end of December Howard's quinine price of 10*sh.*, and Pelietier's of 11*sh.* were regarded only as nominal. This operation, which by its gigantic scope recalls the bourse manœuvres of Bontoux, and may have been undertaken with a view of recovering former losses in bark speculations, appears to have been based upon the information that the Cuprea bark, which has so suddenly been brought into prominence, will soon have played out its *rôle*, and that the effect would then fall with the cause. A sudden failure of this new bark, which depends upon the accidental discovery of a few cinchona forests—soon exhausted—in a distant province of Colombia, yielding about 90,000 colli (corresponding to 75,000 kilos of quinine), would undoubtedly inflict upon the market a most serious loss in manufacturers' bark. Last year's imports, at London, amounted to 120,000 colli, of which 60,000 were Cuprea. The following tables will be of interest:

Imports of Bark at London. Colli.

	1881.	1880.	1879.	1878.
Calisaya	7,020	6,580	9,190	7,835
Soft Colombia, New Granada and Hard Pitayo	87,200*	44,500	16,370	15,350
			14,290	10,045
Carthagena	5,720	6,480	5,360	5,770
East Indian and Ceylon	15,400	20,690	13,460	6,250
Total	115,340	78,250	58,670	45,250

Deliveries.

	1881.	1880.	1879.	1878.
Calisaya	6,720	4,005	8,585	7,865
Other manufact. barks	97,620	60,285	44,965	35,910
Total	104,340	64,290	53,550	43,775

Stocks.

At the end of 1881.	1880.	1879.	1878.
Calisaya	4,500	4,200	1,625	1,025
Other manuf. barks	34,700†	23,970	12,580	8,065
Total	39,200	28,170	14,205	9,090

Value of Import and Export of Bark in Great Britain.

Imports,	1881: 125,217 cwt.,	value £	1,812,501
"	1880: 79,802 "	"	1,185,334
Exports,	1881: 62,905 "	"	729,907
"	1880: 48,348 "	"	611,155

Imports at New York.

	1881.	1880.	1879.	1878.
Direct shipments from Colombia and New Gra'da	31,400	32,800	46,700	41,000
Stocks at end of year	12,500	11,800	29,000	17,400

Imports in France.

	1881.	1880.	1879.	1878.
Calisaya	9,915	8,590	8,030	7,120
Colombia, N. Gra'da, etc.	16,550	11,580	7,960	4,820

A good deal of the French stocks went to Italy, being consumed in the constantly increasing manufacture of quinine; namely, 432,668 kilos in 1879 and 770,033 kilos in 1880.

The German empire received, in 1881, 2,167,800 kilos, against 1,498,300 kilos in 1880. It exported 142,100 kilos (among them 119,200 kilos to Italy), in 1881, against 40,100 kilos in 1880.

Taking now a general view of the condition of the bark market since the beginning of this year, there were available 48,000 colli (of all sorts) in London, 12,500 in New York, and 6,600 in Paris. By new arrivals in London, during January, 13,007 colli, and February 6,973 colli (of which only 6,353 and 2,745 have been consumed), the London stocks have reached the enormous quantity of about 59,000 colli. As is shown by the small deliveries lately, manufacturers and consumers have offered a decided resistance to the excessive demands of holders, which was altogether out of proportion to the demands of the market. Importers were hence compelled to yield occasionally, and some lots of bark have lately been sold at a decline of about 20 per cent. Everything will now depend upon the demand for quinine during the next months, and also upon the continuance or stoppage of the arrivals of Cuprea bark.

Cuprea bark made its first appearance on the London market in 1857, and has often been confounded with a very similar but valueless bark, viz., from *Cinchona nova*. It was generally neglected until Howard drew attention to its comparative richness in quinine. The supply, however, has been very irregular and scanty since 1872. About this time, Prof. Flückiger described its characteristics, distinguishing it from Cinchona nova; and Hesse published his chemical studies of the bark. Afterwards, it again disap-

* This includes 60,000 colli of Cuprea.
† This includes 23,000 colli of Cuprea.

peared from the market until it has lately again made its appearance in very large quantities. The discovery of the new bark district in the State of Santander (U. S. of Colombia), situated upon the low mountainous tracts towards Buccaramanga, was due to a mere accident, as nobody supposed that a valuable bark could occur at so low an altitude. But as soon as favorable reports on the samples sent to Europe had been received, the gathering was begun on a large scale, and the forests are now said to be entirely exhausted. The transport alone to Buccaramanga, upon the backs of men and mules, and from there to the next river station is said to have already become very difficult, expensive, and tedious, so that only the best qualities of this bark, costing 3*sh.* 6*d.* to 3*sh.* 8*d.* per pound in London, have proved to be profitable, and large quantities of inferior bark are said to have been thrown aside altogether. According to Dr. Robbins, the bark growing at an altitude of 1,900 feet contains about 2 per cent, at 2,700 feet about 2.42 per cent of alkaloids; the upper limit is reached at 4,000 feet. A peculiar feature of the bark is this: that it does not contain any cinchonidine, but is rich in amorphous alkaloids (0.44 to 0.41%). A new alkaloid, cinchonamine, has also been discovered in it.

Bromine and Bromide of Potassium.—In spite of the equality of bromine quotations on both sides of the Atlantic, American bromide of potassium is shipped to Germany at a lower price than it could be prepared for from German bromine. This may be owing to special advantages enjoyed by the American manufacturers when purchasing bromine for export [? Ed. N. R.].

Previous attempts to bring about a lasting advance of bromine prices failed through the absence of a coalition between the principal American and the German producers. Lately, however, a company has been organized in the State of West Virginia, with a capital of $10,000,000, for the purpose of monopolizing the bromine manufacture throughout the United States, and thereby acquiring the power of fixing prices. Indeed, an advance has already taken place in American bromine.

Condurango.—The *Condurango Metaperro*, from Ecuador, has lately been again in more lively demand; but the supply of the genuine is exhausted. The Venezuelan condurango, "Stipites Guaco," is at present substituted for it, and is even considered by many as more effective.

Creasote.—The very onerous manufacture of beechwood-tar creasote appears to have been without profit to the manufacturers, since one of them has withdrawn from the business. This circumstance gave the others an opportunity to advance the price of the product somewhat.

Cubebs.—The price rose during the last summer from 55 to 85 cts. per ½ kilo in Holland; at the end of 1881, it had advanced to 125 cts. Since then it has slightly delined, and will probably yield still more. Although stocks are small, still the brisk demand from the United Stales (where cubebs had suddenly acquired a reputation as a remedy for catarrhal affections) has ceased, and the high price is likely to induce the starting of new plantations upon Java and Penang, where cubeb-fields, at a time when cubebs only brought 15 to 18 cts. per half-kilo, had to give way to coffee plantations.

Curare.—The greatly diminished cost of this article was favorable to its further study. Gehe & Co. have found that it contains about 8½ per cent of curarine, an alkaloid soluble in water and alcohol, and also 15 per cent of another alkaloid soluble in water, but insoluble in alcohol. *Curarine* is more active than the other, so small a quantity as $\frac{1}{10}$ milligram being sufficient to paralyze the lower extremities of a rabbit. On the other hand, 1 milligram of the other alkaloid, which Gehe & Co. call *Upasine*, failed to affect rabbits; 2 milligrams, however, cause complete paralysis during a whole day, after which the normal healthy condition is restored.

Daturine.—Is less in demand than formerly, but appears to deserve more attention at the hands of physicians, provided Ladenburg's statements, that it is identical with duboisine and hyoscyamine, are confirmed. Daturine gives less trouble in preparation, and stramonium seeds are more abundant and more readily procured than hyoscyamus seeds. Still, if the demand should increase much, even this source would not be sufficient, and it would then be necessary to try to prepare it by fractional crystallization of atropine, which it accompanies in large quantity, according to Ladenburg.

Glycerin.—An increased demand, chiefly for dynamite manufacture, and the impossibility of disposing of the ac companying products (stearin and olein) drove the price up about 100 per cent during the past year. Besides, speculation took possession of the article, but not always to the personal benefit of the speculator. The owner of a patent for the recovery of glycerin from soap liquors, expecting to work the process successfully, had sold in Paris about three and one-half millions of kilograms of glycerin suitable for dynamite manufacture on future delivery. Afterwards, when his process turned out to be a failure, he was compelled to buy it at any price to cover himself.

Hydrogen Peroxide is lately much recommended as a remedy in "fermentative" diseases. The article has the disagreeable property of easily exploding, that is, suddenly parting with its excess of oxygen, under conditions which are not yet fully understood.

Jaborandi.—Jaborandi leaves arrived in large quantities. Hamburg received, in 1881: 16,700 kilos, against 11,500 in 1880, and 3,000 in 1879. Although the demand for the genuine Pernambuco leaves for the manufacture of pilocarpine has been active, still it could not absorb the great quantities imported; hence the price of the drug fell so low that it hardly pays to handle it. The inert Argentine jaborandi was entirely neglected.

Lactic Acid has maintained its price, but is sure to become cheaper during the next few years, if the process of preparing it from grape-sugar by concentrated caustic alkalies turns out to be a success.

Musk.—The arrivals of Tonquin musk from China during last year were much smaller than formerly. So-called pile I., which fetched in January, 1881, from 52 to 56*sh.* per ounce in London, brought at the end of the year 70*sh.*, in February and March even 74*sh.* The reports from China are still very unfavorable. While formerly considerable quantities reached the Shanghai market during January and February, only a few lots have arrived so far this year; and, though not of the first quality, they found ready purchasers at prices fifty per cent over those of the last year. It is supposed that the mandarines have promulgated a law for protecting the animals during the breeding period, to prevent their entire extermination. (The consumption of musk in France is very large; 729,344 grams were imported there in 1880, and only 208,950 grams re-exported.)

Naphthol.—This new remedy for certain skin-diseases seems to be gradually gaining favor.

Oils of Bergamot, Lemon, and Orange.—The first-mentioned oil, which used to be the highest in price, has now become the lowest, owing to a very large yield. Besides, its usual adulterant, namely oil of sweet orange peel (oil of Portugal), could hardly be used for admixture, during the past season, as it was rather scarce on account of the large export of the fruit.

Oil of Staranise.—Fluctuated but little during the past year, ruling between 8*sh.* 9*d.* and 9*sh.* at London. In China, as much as $278 was asked per picul in August last. Although the harvest of staranise was small, the greater part of the yield had nevertheless been consumed in the manufacture of the oil; the accumulating stocks in Macao, and considerable supplies still on hand in Europe and New York brought about a steady decline, so that the latest London quotations have fallen to 8*sh.* It is now said that the Chinese would prefer for the future to sell the staranise itself, for which reason a further decline of the price of the oil is not to be expected.

Opium.—Greater extremes in the results of two successive opium harvests have scarcely ever occurred than in the last two years. During the previous twelve years, the average annual crop of the opium districts of Asia Minor is estimated at 5,000 couffes, with an average value of 20*sh.*

per English pound for good druggists' opium. In the year 1880, however, the crop amounted to only 2,500 couffes, average price 27*sh.*, while, in 1881, the yield rose to 12,000 couffes, and the price descended as low as 11*sh.* 6*d.* This unusually large crop was caused partly by very favorable weather during the time of growth and collection, partly by an extension of poppy culture. Since purchases had been very restricted during the months immediately preceding the harvest, on account of the ruling high price, the arrival of the new crop at once created an exceedingly active market, all hands desiring to lay in stock. Besides, large deliveries had been contracted for by speculators, expecting that prices would recede still lower, when the main bulk of the crop would reach the market. However, when the time came to fulfil their engagements, the demand had become so active as to send the price upwards. Purchases of the Dutch Government to the amount of 700 chests of Karahissar further contributed towards a steadying of the market, and while good Yerli stood at 108 to 110 piasters (its lowest mark) during Aug., in Smyrna, this quality afterwards maintained a steady value of 120 to 123 piasters; finest Bogaditch, 125 to 128 piasters. Since the beginning of this year, both purchasers and sellers are considerably reserved. The former, in view of the favorable winter, calculated for a still larger crop and still lower prices than in 1881, and, even if there should be only a medium crop, the price would have to remain about as it, because to the last crop of 12,000 chests, an existing stock of almost 3,000 more in Turkey, London, and New York must be added, the total of which represents a two years' supply of opium. During February, however, very alarming rumors came from Asia Minor; it was said that severe frosts had completely ruined the plantations in many districts, that it was useless to sow again, etc., etc., and, in consequence thereof, the price of Yerli rapidly advanced to 130 and 135 piasters, and that of Bogaditch to 140 piasters, Constantinople and London following with an advance of 1*sh.* 6*d.* per lb. Recently, affairs are looked upon more calmly, the damages being much smaller than was first reported.

Papayotin.—Gehe & Co.'s preparation is much liked, owing to its efficacy; still, the manufacturers have not been able, themselves, to place much confidence in it, and they do not think that the article will have an assured future. They think that 1 *gm.* of pepsin is far more valuable and active than 100 *gm.* of papayotin.

Peptone in a semi-liquid condition is still in demand, in spite of its many disadvantages, among which is specially to be mentioned the readiness with which it decomposes in summer. Lately, however, *a dry* form of peptone has been introduced, and Gehe & Co. themselves prepare such a dry peptone from blood-fibrin, on a large scale. This new preparation is perfectly odorless, and much resembles the well-known dry malt extract of the same manfacturers. Its taste is by no means disagreeable, as is often the case with liquid peptones.

Physostigmine.—The consumption of this alkaloid is constantly on the increase. The sulphate is the salt most generally in use so far; when the salicylate will have become officinal, the latter may perhaps receive preference.

Pilocarpine.—Abundant supply of crude material has cheapened this alkaloid considerably. The hydrochlorate is most generally in use; besides this, the nitrate, and lately also the sulphate to some extent.

Quinine sulphate.—As already detailed under cinchona, a quite unexpected advance took place during December, in consequence of the gigantic operation of certain London bark houses. It may be added here, that the capital required for such an undertaking must have been from £1,500,000 to £2,000,000, a sum which is not available to any single speculator; hence it was supposed that the movement was backed by a club of speculators or perhaps by a combination of continental manufacturers of quinine. The latter, however, was not the case, as most of them were at that time short of bark, and they have not succeeded, up to the present time, in offering an active resistance to the combination.

Cinchonidine sulphate.—If cuprea bark should continue for some time longer to be thrown on the market in the present enormous quantities, the price of this alkaloid would necessarily advance, as cuprea bark does not contain it at all.

Resorcin.—Of the three di-hydroxyls of benzol, this retains the most favor, the sale of the three allied substances, resorcin, hydroquinone, and pyrocatechin being in the proportion 50 : 10 : 1.

Salicylic acid.—It may not be without value to repeat here the methods of testing the purity of salicylic acid and salicylate of sodium as recommended by Dr. F. von Heyden.

Testing Salicylic acid.

Put about 0.3 to 0.5 *gm.* into a test-tube, dissolve it in the least possible quantity of absolute alcohol, and pour the clear solution upon a watch-glass, which is to be placed upon a white surface.

Mechanical impurities are seen in the centre of the glass, at the bottom of the liquid; their nature may be easily recognized by the microscope. On now allowing the alcohol to evaporate in an atmosphere as free as possible from dust and iron, the acid crystallizes by efflorescence, and the following points are now to be noted:

a. If the points of the effloresced crystals are brown and globular, the acid contains resinous substances (from phenol), and should be rejected.

b. If the points are bright-yellow, but not globular and not densely packed together like a fungus, but in fine tree or moss-like branches, the acid is free from resin and phenol, but not entirely free from traces of an organic coloring matter.

c. If the points are clear, colorless, mossy, and slender (without globular points), the acid is pure.

d. If the points are violet or rose-colored, the acid contains traces of iron.*

e. On ignition upon platinum foil, the acid must leave no fixed residue.

Testing Salicylate of Sodium.

a. The *dry* salt, when kept in dry and well-closed vessels, should not change in appearance, color, or reactions.

b. The solution should be clear, bright, colorless and odorless, and may have a color of pale Rhine-wine only in very concentrated solution.

c. On carefully pouring upon the salt, in a capsule or beaker, some water, no gas should be given off. Should gas be evolved (which is easily distinguished by an expert from the escape of confined air-bubbles), the salt is not a saturated compound, but a mixture of salicylic acid and carbonate or bicarbonate of sodium. The true salt must be perfectly homogeneous, without evolving gas; since a mere mixture vitiates the usual calculations of doses.

d. The salt should have a faintly acid reaction.

e. Hence, when placed upon moistened blue litmus paper, it should impart to the latter a uniform red stain. Mechanical mixtures, on the other hand, would leave speckled spots of red and blue (the latter on account of the presence of undecomposed bicarbonate of sodium), or, when applied to red litmus paper, would produce blue spots.

f. The "powdery" salicylate of sodium is seen to consist, under the microscope, of uniform scales having a mother-of-pearl lustre, such as are visible to the naked eye in the case of the crystallized salt. A flour-like powder does not correspond to the characteristics of a perfectly normal salt.

Thymol.—The consumption of this substance has considerably diminished, being only about one-half of that of the year 1878. It is demanded only in very small lots for pharmaceutical purposes, and most of it goes to England and the United States, some also to Italy, apparently more for cosmetic than medical uses. The sanitary physicians of

* N. B.—Occasionally it has happened that perfectly pure and white salicylic acid, after having been shipped from the factory, assumed a faint rose tint, while another batch of the *same* product stored in the same place, or elsewhere, had remained entirely white. Nevertheless, the faintly tinted portion stood the above tests of purity completely.

Pesth (Hungary) lately issued directions compelling the children to wear a bag containing thymol suspended from the neck during the visit of the schools, as a protection against contagious diseases. The result is not known to us.

The Early History of Cinchona.*

In 1638 the wife of Don Luis Geronimo Fernandez de Cabrera Bobadilla y Mendoza, fourth Count of Chinchon, and Viceroy of Peru, lay sick of an intermittent fever in the palace of Lima.

This lady's maiden name was Ana de Osorio, a daughter of the noble family, whose founder was created Marquis of Astorga by Henry IV., King of Castille.

The eighth marquis had a daughter by his wife Dona Blanca Manrique y Aragon, named Ana, born in 1599, in her father's palace at Astorga. Her father died on January 28th, 1613, and her mother at Valderos in 1619. Both are buried in the family chapel, in the cathedral of Astorga. Two years after her father's death, the youthful Lady Ana, then only sixteen years of age, was taken from her home amidst the pleasant highlands of Leon—a land of Alpine passes, trout streams, verdant meadows, and groves of chestnuts and walnuts—to be married to Don Luis de Velasco, grandson of the first Marquis of Salinas, and the young couple went to live at Seville.

But Don Luis died in the prime of life in 1619, and the Lady Ana, still young and very beautiful, became a widow and orphan. She was made a lady-in-waiting to Queen Margaret, wife of Philip III., and removed from Seville to Madrid.

Here she won the love of a nobleman of distinction. The youthful widow was married at Madrid, on Sunday, the 12th of August, 1621, to the Count of Chinchon.

Her husband, of an old Catalonian family, was the grandchild of the first Count by Beatriz de Bobadilla, the faithful friend and attendant of Queen Isabella.

He was hereditary Alcaide of Segovia, Lord of the Castle of Chinchon near Madrid, and of eighteen towns in the kingdom of Toledo.

The Count and Countess of Chinchon entertained Prince Charles and the Duke of Buckingham at the Alcazar of Segovia, when, says the record, "they supped on certain trouts of extraordinary greatness."

In 1628 the Count was appointed Viceroy of Peru, and he and his Countess made their solemn entry into Lima on the 14th of January, 1629.

The great event of this viceroyalty was the cure of the Countess of Chinchon, in the year 1638, of a tertian fever by the use of Peruvian bark.

The news of her illness at Lima reached Don Francisco Lopez de Cañizares, the Corregidor of Loxa, who had become acquainted with the febrifuge virtues of the bark. He sent a parcel of it to the Vice-Queen, and the new remedy, administered by her physician, Dr. Don Juan de Vega, effected a rapid and complete cure.

It is known by tradition, amongst the bark collectors, that the particular species from which the bark was taken, which cured the Countess of Chinchon, was that known to them as *Cascarilla de Chahuarguera*.

These trees are a variety of the *C. officinalis* of Linnæus, many thousands of which are now growing in India.

There are four alkaloids with febrifuge virtues in chinchona bark, called quinine, quinidine, chinchonine, and chinchonidine. The *Cascarilla de Chahuarguera* abounds in chinchonidine, and Mr. Howard has pointed out that this particular alkaloid probably cured the Countess. Madame de Genlis wrote a short novel founded on the cure of the Countess of Chinchon, which she dedicated to the Countess de Choiseul. It is entitled *Zuma*, and though erroneous in every particular so far as all the facts are concerned, it yet proves the deep and general interest which attaches to the first introduction of *quina* bark into Europe by the Vice-Queen.

The Countess of Chinchon returned to Spain in the spring of 1640, bringing with her a supply of that precious *quina* bark which had worked so wonderful a cure upon herself, and the healing virtues of which she intended to distribute amongst the sick on her husband's estate. It thus gradually became known in Europe, and was most appropriately called Countess's powder (Pulvis Comitissæ).

By this name it was long known to druggists and in commerce. Dr. Juan de Vega, the learned physician of the Countess of Chinchon, followed his patient to Spain, bringing with him a quantity of *quina* bark, which he sold at Seville for 100 reals the pound.

The bark continued to have the same high value and the same reputation, until the trees became scarce and the collectors began to adulterate it.

After their return from Peru, the Count and Countess usually resided at the castle of Chinchon, built by the Count's father in 1590. The Countess administered Peruvian bark to the sufferers from tertian agues on her lord's estates, in the fertile but unhealthy vegas of the Tagus, the Jarama, and the Tajuna. She thus spread blessing around her, and her good deeds are even now remembered by the people of Chinchon and Colmenar, in local traditions.

The town of Chinchon is in the south-east corner of the province of Madrid, on high ground, with hills, covered with wheat fields and vineyards, sloping off on one side to the *vega* of the Tagus, and on the other to that of the Tajuna. The distance from Madrid to Chinchon is twenty-four miles, and the ruins of the old castle, on its breezy hill, are seen from afar, with the little town nestling at its feet.

In memory of the great service to humanity performed by the Countess of Chinchon, Linnæus named the genus which yields Peruvian bark, *Chinchona*.

Unfortunately the great botanist was misinformed as to the name of her whom he desired to honor. This is to be accounted for by his having received his knowledge of the Countess through a foreign, and not a Spanish source. Thus misled, Linnæus spelt the word *Cinchona* (Gen. Pl., ed. 1742) and *Cinhona* (Gen. Pl., ed. 1767), omitting one of the letters. It was still more unlucky that Linnæus died before the error was pointed out and corrected. This was done by the Spanish botanists Ruiz and Pavon, who landed in Peru in 1788, the year of Linnæus's death. They advocated the correct spelling of the name, and their example was followed by Mutis and others.

The correct spelling ought now to be generally adopted, because the mutilation of the name frustrates the object of Linnæus, which was to preserve the memory of the Countess. The genus is called Chinchona because it is named after the Countess of Chinchon.

After the cure of the Countess of Chinchon, the Jesuits were the great promoters of the introduction of bark into Europe. In 1670 these fathers sent parcels of the powdered bark to Rome, whence it was distributed to members of the fraternity throughout Europe, by Cardinal de Lugo, and used for the cure of agues with great success. Hence the name of "Jesuits' bark," and "Cardinal's bark," and it was a ludicrous result of its patronage by the Jesuits that its use should have been for a long time opposed by Protestants, and favored by Roman Catholics.

In 1679, Louis XIV. bought the secret of preparing quinquina from Sir Robert Talbor, an English doctor, for 2,000 louis-d'or, a large pension, and a title.

From that time Peruvian bark seems to have been recognized as the most efficacious remedy for intermittent fevers. The second Lord Shaftesbury, who died in 1699, mentions, in one of his letters, Dr. Locke's and all our ingenious and and able doctors' method of treating fevers with the Peruvian bark. He declares his belief that it is "the most innocent and effectual of all medicines;" but he also alludes to "the bugbear the world makes of it, especially by the tribe of inferior physicians." There can be no doubt that a very strong prejudice was raised against it, which it took many

* Printed in reply to a Query. From *C. R. Markham: Peruvian Bark.* London, 1880, p. 8, etc.

years to conquer; and the controversies that arose on the subject, between learned doctors, were long and acrimonious.

Dr. Colmenero, a professor of the University of Salamanca, wrote a work in which he declared that ninety sudden deaths had been caused by its use in Madrid alone. Cheflet (Paris, 1653) and Plempius (Rome, 1656), two great enemies of novelty, prophesied the early death of quinquina, and its inevitable malediction by future ages; while the more enlightened Badius (Genoa, 1656) defended its use, and quoted more than 12,000 cures by the aid of this remedy, performed by the best doctors of the hospitals in Italy.

In 1692, Dr. Morton, one of the opponents of its use, was obliged to retract all he had said against quinquina; and it was then that it began to be generally admitted as a valuable medicine. It still, however, remained a subject of controversy, and as late as 1714 two Italian physicians, Ramazzini and Torti, held opposite views on the subject. Ramazzini wrote against its use with much violence, while Torti maintained that, in proper doses, it would arrest remittent and intermittent fevers.

Whilst the inestimable value of Peruvian bark was gradually forcing conviction on the most bigoted medical conservatives of Europe, and whilst the number and efficacy of the cures effected by its means were bringing it into general use, and consequently increasing the demand, it was long before any knowledge was obtained of the tree from which it was taken. In 1682, La Fontaine, at the solicitation of the Duchess of Bouillon, who had been cured of a dangerous fever by taking Peruvian bark, composed a poem in two cantos to celebrate its virtues; but the exquisite beauty of the leaves, and the delicious fragrance of the flowers of the quinquina-tree, with allusions to which he might have adorned his poem, were still unknown in Europe.

An Instrument for Determining the Strength of Alcoholic Solutions.

AT a recent meeting of the Suffolk District Medical Society of Massachusetts, the Secretary showed a small and simple instrument, of French manufacture, for determining the strength of alcoholic solutions. It consists of a small strip of wood which is laid across the top of a tumbler or wine glass containing the solution to be tested; this acts merely as a holder for a piece of capillary tube, such as thermometers are made of, which is slid vertically through an opening in the wood until the lower end of the tube just touches the surface of the liquid. As soon as the tube touches the liquid, the latter is drawn up by capillary attraction, and the point to which it rises is read off on the scale on the tube which is graduated from 0 to 20: these numbers indicate the per cent of alcohol. Or better, the liquid is sucked up a little way, by applying the mouth to the upper end, and allowed to run down to a point where it remains fixed.

The basis of the method is, that in the same tube water is drawn up by capillary attraction very much higher than alcohol, so that when alcohol is present in the water it lessens the height to which the mixture will rise in a capillary tube.

The scale goes only as high as twenty per cent of alcohol, but with stronger solutions a small quantity may be taken and diluted with once or twice its volume of water before testing.

By this instrument one may readily determine the per cent of alcohol in dry wines, but not in those containing much sugar, as this acts in a way similar to alcohol.

Greasy Bottles.

THE following preparation is recommended as an efficient solvent for grease in obstinately dirty bottles: Take of castile soap in shavings, 4 oz.; carbonate of soda, 2 oz.; borax, 1 oz.; aqua ammonia, 7 oz.; alcohol, 3 oz.; sulphuric ether, 2 oz.; add soft water sufficient to make one gallon. The soap should be boiled in the water until it is dissolved, and the other ingredients then added.

A New Process for the Estimation of Uric Acid.

DR. E. A. COOK, in the *British Medical Journal* of April 15th, gives a method for approximately estimating the amount of uric acid in normal urine from which the following is taken. With the aid of a filter-pump, the precipitation, washing, and evolution of gas may be accomplished in an hour and a half. The results of this process confirm Pavy's suggestion that the normal amount of uric acid excreted by a healthy adult is much greater than has hitherto been supposed; not less than ten grains, and seldom less than twelve grains being the quantity discharged in twenty-four hours.

"After many trials, it was found that urate of zinc was probably the most suitable insoluble compound to form a basis for a process to estimate the acid. If to a solution of urate of soda, slightly alkaline, a solution of zinc sulphate be added, a white gelatinous precipitate will be thrown down; and if 100 *cc.* of a very dilute solution of zinc sulphate be taken, and one or two drops of a solution of urate of soda, containing .648 *gm.* of uric acid, in 100 *cc.*, be added, a permanent precipitate of urate of zinc will result; and, although this precipitate is certainly soluble, it is very slightly so in neutral or slightly acid solutions. It is soluble in caustic alkali and in free acid.

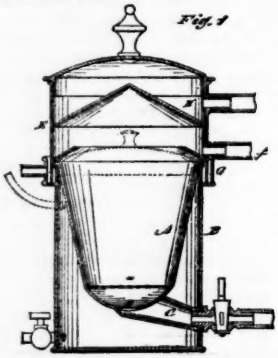
"If 10 *cc.* of the above solution of urate of soda be placed in a urea estimation apparatus, with sodium hypobromite, it will, at 60° Fahr. and 30 in barometer, yield 8.5 *cc.* of nitrogen gas. If 10 *cc.* of such a solution be added to 90 *cc.* of water, and precipitated with a strong solution of zinc sulphate, the precipitate washed with water saturated with zinc urate and then filtered, and the precipitate placed in a urea estimation apparatus, with sufficient sodium hypobromite of full strength, it will yield 8 *cc.* nitrogen at the above temperature and pressure.

"To apply these facts to the estimation of uric acid in urine, it is sufficient to take 300 or 400 *cc.* of the urine and add a few drops of strong solution of caustic soda, enough to render it decidedly alkaline; allow the precipitate of phosphates to subside, and pour off 100 *cc.* of the clear solution; add to this clear solution about 4 *cc.* of a solution of zinc sulphate, 1 in 3 strength. The solution of zinc sulphate renders blue litmus red, and it must be added to the urine until a drop of the mixture on blue litmus gives a slightly red circle. If the solution be too acid, a drop or two of caustic solution will render it neutral. The precipitate is thrown on a filter, and washed with a saturated solution of zinc urate. This solution is made by adding a little zinc sulphate to distilled water, and then adding urate of soda until a permanent precipitate remains; this is allowed to subside, and the solution is used for washing until all urea and ammonia are removed. The drained precipitate is folded in the filter, and placed, with 50 *cc.* of hypobromite of sodium of full strength, in an urea estimation apparatus, and agitated carefully. The gas evolved will be an indication of the amount of uric acid present in 100 *cc.* of the urine. The evolution of gas does not commence immediately, and there is sufficient time to insert the stopper and note the number at which the water stands in the gas-tube. If a reaction begin immediately, the precipitate has not been sufficiently washed. The reaction is complete at the end of half an hour, without the application of heat. On many occasions, when the urine precipitate was mixed with the hypobromite, a blue color appeared, and again disappeared, and at first this was supposed to be due to a substance other than uric acid; but, in repeated experiments with urate of zinc, made from pure white crystals of uric acid, the same blue color was observed. This blue is not indigo. A quantity of pure urate of soda was precipitated with zinc sulphate, and washed; the precipitate mixed with distilled water, and hypobromite of sodium added drop by drop; the color appeared, and deepened to a dark blue. Tartaric acid was then added, when the color disappeared, and would not return when the solution was rendered alkaline; nor on further addition of hypobromite. The zinc precipitate can be dissolved in caustic soda solution, diluted, and used with boiling Fehling's solution, in the manner proposed by Pavy."

Combined Percolator and Still.

THE accompanying engraving shows a central vertical section of an improved combined percolator and still, which is the invention of Mr. Byron Fennor, of Westfield, Chautauqua Co., N. Y., who has recently received letters patent for it.

It is often a great convenience for persons who are obliged to distil and make decoctions to have an apparatus that is not complicated and may be used for either purpose, and may still be effectual. The device shown is of this kind. The percolator *A*, in which is placed the material from which the strength is to be obtained, is cone-shaped, and formed at the upper edge with a flange, by which it is suspended in the heating-tank *B*. The bottom of the percolator has an opening which communicates with the lateral tube *C*. This tube registers with a hole in the tank, and a flanged stop-cock is screwed into the end of it, which serves to keep the percolator in place, and to make a tight joint over the hole in the tank. A perforated diaphragm is placed in the bottom of the percolator, which prevents the materials used from obstructing the flow of the menstruum from the bottom.



Fennor's Percolator and Still.

The still-attachment *E* is of larger diameter than the tank, and, when in place, the bottom of it rests in the annular chamber which surrounds the top of the tank, and should be filled with water when the still is used, to seal the joint between the two parts of the apparatus.

A short distance above the lower edge of the still-attachment a cone-shaped flange is attached, which forms an annular gutter around the inside of the still, and conducts the distillate which flows from the condenser to the pipe *f*.

The condenser is formed by securing a conical partition below the upper edge of the still and forming the receptacle *H*, in which there is water or ice, and by which the vapors that arise from the percolator are condensed, and flow into the gutter and out of the pipe *f*.

When the device is used for any purpose where heat should be maintained, water is admitted to the tank *B* through the pipe *f*, and heat applied to the tank, being communicated to the percolator only through the medium of the water.

When the still is removed, a cover, shown by dotted lines, may be used.

While this is here shown as adapted to pharmaceutical uses, it is obvious that it may be built upon a large scale, and used for other purposes.

Iodoform-Cotton.

IODOFORM-cotton has been extensively used at the University Hospital, London, as an antiseptic dressing. Mr. Gerard, the pharmacist to the hospital, says "that the great difficulty encountered in preparing the cotton is to obtain an even distribution of the iodoform. The desired end is best obtained by treating the powdered drug with ether, in the proportion of about eighty-eight parts of ether to eight of iodoform. In about four pints of this mixture, half a pound of fine clean cotton-wool is soaked for a short time; the wool is afterwards placed in a drug-press. About three pints of ether can be squeezed out, and, when dry, the wool contains about ten per cent of iodoform. The same objection is made against this wool as against salicylic wool—namely, that its use spreads about the room an irritating dust, with this further disadvantage, that the odor is to most people very offensive. A little glycerin added to the ether used in its preparation checks the former tendency, and the latter drawback is minimized by the addition of eucalyptus oil. The wool ought to be stored in air-tight boxes, and not handled more than necessary before use. It is too early as yet to speak decisively of the value of this antiseptic from experience gained in England, but we believe that it has given a good deal of satisfaction to those who have used it, and has proved itself especially valuable in cases where carbolic acid is, either from idiosyncrasy or from the delicate nature of the parts involved, too irritating to be borne."—*Brit. Med. Journ.*

Solvents for Iodoform.

ACCORDING to Dr. Vulpius, of Heidelberg, the following etheral oils and hydrocarbons dissolve the iodoform in the proportions stated:

Petroleum ether dissolves	1 per cent.
Benzin "	1.5 "
Oil of turpentine	4 "
" lavender	7 "
" cloves	8 "
" fennel	9 "
" lemon	9 "
" rosemary	9 "
" cinnamon (cassia)	14 "
" caraway	16 "

The difference in solvent power of these liquids is quite remarkable. Perhaps there is a certain connection between solvent power and oxygenated constituents, the former increasing with the latter. It may be added incidentally that the solution of iodoform in benzin and petroleum ether soon acquires a rose-color. A 5% solution of iodoform in chloroform soon assumes a dark-red color, which points to an energetic chemical action.

"Manicure."

A NUMBER of persons at New York and at frequented summer resorts have for some time past been doing a profitable business in the treatment of the hands and finger-nails of those who consider themselves to be in need of such service. In a recent number of the *Art Interchange*, published in this city, the editor gives the following reply (in substance) to a correspondent who wishes information concerning the methods and materials employed. It is not unlikely that some of our readers may find it profitable to prepare the materials requisite, and give the necessary directions for their use.

For cosmetic gloves, take chamois or castor—the best quality is not necessary—three sizes larger than the person ordinarily wears; rip them open and spread them with the pastes below described. If you call at the lady's house and examine her hands, and learn what they need and the number of her gloves, you can prepare accordingly, and order gloves to be worn at night. The following is a useful prescription for whitening the hands, to be preceded by baths and washes, to be described further on.

Cosmetic Paste No. 1.—Myrrh, 1 ounce; honey, 4 oz. yellow wax, 2 oz.; rose water, 6 oz.; glycerin added according to thickness of paste, just enough to make it spread easily. Melt the wax in a dish over boiling water, add the myrrh while hot; beat up together, then add honey and rose water; beat again, and lastly add glycerin from a teaspoonful up; spread over the inside of the gloves; then sew them up; they are ready for use.

Cosmetic Paste No. 2.—Two teaspoons of oil of sweet almonds; one ounce of rose water, thirty-six drops tincture

benzoin; one teaspoonful glycerin; yolks of two fresh eggs; one teaspoonful of rice flour. Beat to a paste, and line gloves, or rub on hands, and wear close-fitting gloves over it at night.

Cosmetic Paste No. 3.—One teaspoonful of the best pine tar; one pint pure olive oil. Melt in tin cup over boiling water. This can be kept on hand, and, if preferred, may be perfumed with rose water. To be spread on hands and worn with gloves. One application will not be sufficient; the beautifying of the skin is a work of more or less time, according to its condition.

Ground barley, the white of an egg, one ounce of honey, and a teaspoonful of glycerin spread thickly inside gloves, and worn at night, is a useful recipe for the hands.

Another recipe for whitening the hands, and an inexpensive one to prepare, is composed of home-made soft soap, half a pound; salad oil, one gill; mutton tallow, one ounce; boil together; then add, when away from fire, spirits of wine, one gill; ambergris or some other perfume, according to fancy; benzoin would answer. Spread on gloves and wear at night.

For ordinary use to keep the hands white where they are used in house work, bran mittens are excellent. Make good-sized mits of cloth, fill with wet bran or oatmeal first, washing the hands with vinegar and glycerin, or lemon-juice and glycerin rubbed in afterward; then put the bran mittens on; tie closely at wrist and wear them every night, or at regular intervals as needed.

Alum added to wine of egg and rose water is good for making the flesh firm; a trifle of glycerin added is an improvement.

Color for finger-tips.—A pinkish tint is thought to be desirable for the tips of the fingers; it can be attained by the use of the following: ⅛ oz. of alkanet root chippings soaked for a week in alcohol diluted with water will give a lovely stain for the finger-tips; apply by dipping a bit of raw cotton in the mixture, and touching the finger-tips with it.

Polish and color for the nails.—Rub the nails, which must first be carefully trimmed with sharp scissors, with equal parts of cinnabar and fine emery powder, and afterwards with scented oil of almonds.

To remove spots.—Pitch and myrrh melted together and laid over the nails over night will soon cause white specks to disappear. Butter or cream will remove the pitch in the morning.

For removing discolorations.—Two ounces of fine almond soap (white soap is always best) dissolved in two ounces of lemon-juice, to which must be added one ounce of oil of almonds and a trifle of carbonate of potash and one teaspoonful of glycerin, stirred up until like soap, is excellent to wash the hands with occasionally, but it must not be used where the skin is chapped or abraded.

A fine toilet salve, and useful for chapped surfaces, is made with two ounces of oil of almonds, one drachm each of wax, spermaceti, and glycerin, melted together and perfumed by two ounces of rose water and half an ounce of orange-flower water.

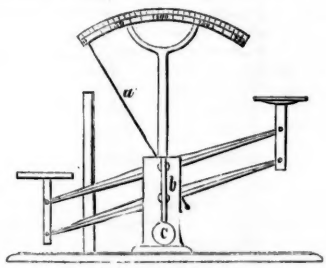
Fine pumice stone smoothed and rounded is exceedingly useful for smoothing the palms of the hands and the fingers. As a first step in beautifying the nails, lather well with warm soap suds from a pure white soap; dry, and while the nails are softened, trim carefully, push down the skin all around to show the shape of the nails and the little half moon at the base of the nails; remove hangnails, and then polish and cover with powder described for the purpose. It would be well to treat the hands at the first, and then remove specks from nails and finally polish. The polishing may afterwards be done by the lady at home, if desired. Use different prescriptions, according to state of hands. Bran in warm water and vinegar is useful for a wash; make into lather with fine white soap, and rub the hands well with the bran. Indian meal and oatmeal are also good for a preparatory bath before trimming and polishing nails and using cosmetic preparations. The various cosmetics can be sold at prices according to their first cost. The washing cosmetic with potash need only be used once or twice, and is useful after the bran bath or before; the cosmetic gloves may follow for night use. Always use pure white soaps; almond soap, glycerin, and lettuce-oil soap are to be recommended; also the oatmeal and fine pumice soaps where the skin will bear the latter.

Punch-Essence.

A SUPERIOR essence is prepared, according to a correspondent of the *Pharmac. Zeitung*, by the following formula:

White sugar	22 pounds.
Lemons	12 "
Oranges	12 "
Green tea	2½ ounces.
Cinnamon	½ ounce.
Vanilla	½ "
Tartaric acid	1 "
Rum	1 gallon.
Arrac	1 "
Water, boiling	1 pint.
Red wine, sufficient.	

Peel the lemons and oranges and digest the peels with the rum for three days. Express the peeled fruits and dissolve the tartaric acid in the juice. Digest the tea, cinnamon and vanilla for fifteen minutes with the boiling water. Filter all the solutions and add them to a thick syrup prepared by boiling the sugar with a sufficient quantity of red wine.



Colassot's Balance.

Regulating Balance.

LOUIS COLASSOT, of Francheville, has taken out a patent (Germ. Pat. 14,862) for a balance which is intended for the rapid weighing of a number of substances not greatly differing in weight from each other. As it may possibly be of use to some of our readers, we give an illustration of it. The index, *a*, is to be adjusted so that it will point to 0, if one side of the balance is charged with a definite weight, say for instance 500 grams; then each additional gram is indicated by one division at the scale. For this purpose the index is adjustable, and is provided with the lever, *b*, and a balance weight, *c*, attached thereto.

Jorissen's Color-Reaction for Fusel Oil.

A FEW years ago, A. Jorissen announced that he had discovered a color-reaction for fusel oil, having noticed that the commercial oil gave a magnificent red color with aniline and hydrochloric acid. This method of detecting fusel oil would have been very valuable, if it had not lately been found by K. Foerster that the color reaction is due, not to the fusel oil itself, nor to amylic alcohol, but to an accompanying impurity, which the last-named chemist ascertained to be *furfurol* ($C_5H_4O_2$). This body has the property of forming fine red but fugitive compounds with bases of the aromatic series.—*Ber. d. Deutsch. Chem. Ges.*, 1882, 230.

Method of Preparing Nitric Oxide (NO).

HEAT gently in an ordinary retort or flask about four parts of the potassium sulphocyanide solution (usually kept for analytical purposes in laboratories) with one part of solution of cobaltous nitrate. Nitric oxide comes off very

readily and in large quantities. Instead of the solutions, the above-mentioned salts in the solid form, slightly moistened with water, are equally effective. The equation is somewhat like the following:

$$4KCNS + Co2NO_3 + H_2O = 6NO + C_4 + 2K_2S + CoS + S + H_2O.$$

—D. EWART JOHNSTONE, in *Chem. News*, April 14th.

Syrups and Beverages.*

Violet Syrup.—8 ozs. fresh, or dried violets, 1 lb. loaf sugar, 1 drachm pulv. orris root. 1 oz. gum arabic, dissolved in 1 gill hot water. Put a round-bottomed copper pan containing the violets over the fire; add the orris root, and pour in the water gradually, stirring carefully from the bottom of the pan; when this has boiled for ten minutes, let the infusion be squeezed out through a rinsed clean cloth into a basin; add the sugar and gum, together with a few drops of cochineal; give these ingredients a boil in a clean copper bowl; remove the scum, and when the syrup is cold, bottle.

Wild Cherry Syrup.—Bruise 1 qt. fresh ripe wild cherries in a mortar with a wooden pestle, that the pulp of the fruit may be crushed without breaking the stones; about a tablespoonful of the latter, however, should be broken with an iron pestle to obtain a certain amount of the bitter flavor of the meats. Add ½ pt. each of alcohol and water; macerate for a week; express and filter. To 1 qt. simple syrup add 4–6 ozs. of the above extract. Ordinary syrup of wild cherry is made by flavoring simple syrup with extract bitter almonds, and coloring. If the fresh fruit cannot be obtained, dried cherries may be used without being bruised, just enough of the spirit being added to cover them; they must be allowed to macerate for at least ten days, and then expressed with considerable force in a strong tincture press.

FERMENTED BEVERAGES.

Corn Beer.—5 gals. water. 2 qts. molasses. 1 qt. sound corn. Put all into a keg and shake well; in a few days a fermentation will have been brought on as nicely as with yeast. Keep it bunged tight. It may be flavored with oil of lemon, etc The corn will last five or six makings. If it gets too sour, add more molasses and water in the above proportions. This drink is cheap, healthy, and there is no better with yeast.

Cottage Beer.—½ pt. good wheat bran. 3 handsful hops. 2 tablespoons yeast. 10 gals. water. 2 qts. molasses. Boil bran and hops in the water until both sink to the bottom; strain through a hair sieve; when lukewarm put in the molasses and stir until it is melted. Put in a cask; bung up, and it will be ready for use in a few days.

Cream Soda without a Fountain.—4 lbs. coffee sugar. 3 nutmegs, grated. 3 pts. water. Whites of 10 eggs, well beaten. 2 ozs. oil lemon, or the equivalent of extract; or other flavor to suit. 1 oz. gum arabic. Mix; place over a gentle fire, stirring well; remove, strain and divide into two parts. Into one part put 8 ozs. bicarbonate of soda; into the other 6 ozs. tartaric acid, shaking well; when cold, pour three or four spoonfuls from each into separate tumblers, one-third full of water; stir and pour together.

Ginger Ale.—Put 4 gals. of clear soft water into a clean cask or earthenware pan, with a wooden tap inserted about an inch from the bottom; mix with this about 6 ozs. of bicarbonate of soda, and allow it to stand 12 hours to settle; draw it carefully off into another tub by means of the tap, but do not disturb the sediment which settles to the bottom of the first tub. Mix with this quantity 2 lbs. of loaf sugar, stirring until the sugar is dissolved; flavor with the extracts of ginger ale; color with burnt sugar, etc.; fill glass lemonade bottles with the usual quantity, adding to each bottle 2 scruples of crystal tartaric acid; drive in the cork immediately, and tie it down with wire in the usual way; in an hour, or as soon as the acid is dissolved, the ale is ready for use, and will open with a sharp report. The action of the acid upon the soda produces carbonic acid gas in the bottles, but the flavor is not equal to that made by machinery.

Ginger Ale Extract.—3 lbs. powdered Jamaica ginger. 1 gal. alcohol. 1 lb. fresh lemon peel. 4 ozs. powdered Cayenne pepper. Macerate for fourteen days, and filter. To make the article known in trade as the soluble essence of ginger ale, that is, a preparation not becoming cloudy on being mixed with water, the same substances above indicated are used, but the process is modified as follows:—The ginger and Cayenne are exhausted by percolation with enough alcohol to obtain two quarts of product; to the percolate 4 or 5 ozs. of heavily calcined magnesia and 3 pts. of water are added. The mixture is now set aside, and shaken vigorously from time to time for about twenty-four hours. Then the whole is thrown upon a filter, and through the residue sixty per cent alcohol is passed until the product measures one gallon. Dilute sulphuric acid is added, drop by drop, until the rich yellow color of the tincture suddenly disappears. Finally ½ lb. of fresh lemon peel is macerated eight days in the liquor, and after filtering the liquor is ready for use.

Ginger Beer.—Crush 12 ozs. of the best ginger, and put it in a large tub; boil 8 gals. of water, and pour thereon; add 5 lbs. best white sugar, 1 oz. cream of tartar, and 1 oz. tartaric acid; stir the whole up with a stick until the sugar is dissolved; allow it to stand till milk warm, then add 1 gill brewers' yeast; stir this in, let it stand for twelve hours, or until a scum forms on the top, then drain it off; clear by means of a tap about an inch from the bottom of the tub; whisk the white of an egg to a froth, and mix it with a teaspoonful of the essense of lemon; strain through a flannel cloth; bottle and tie down.

Ginger Beer (2).—5 gals. water. ½ oz. tartaric acid. 4 lemons, sliced thin. 12 ozs. ginger. ¾ oz. cream tartar. Whites of 2 eggs. ½ oz. compressed yeast. 5 lbs. sugar. Proceed as for ginger beer (1).

Ginger Beer (3). 8 gals. boiling water. 5 lbs. of best white sugar. ½ oz. cream tartar. White of egg beaten to a froth. ½ lb. best ginger. 2 ozs. tartaric acid. 1 teaspoonful essence lemon. 1 gill brewers' yeast. Leave to work twenty-four hours before bottling.

Ginger Beer—by Steam Power.—The arrangement for getting the boiling water is by means of a steam coil; the boiling water from this is then allowed to run into a tub containing the ginger, which has been previously crushed; another tub is provided below this, and when the strength of the ginger has been thoroughly extracted and the liquid almost lukewarm, it is passed into this second tub, where the further ingredients are added. For 150 gals. of ginger beer proceed as follows: Prepare 50 gals. of boiling water as explained above; crush from 12 to 15 lbs. of the best ginger, and put them into the first cask; let the 50 gals. of water run to this, and follow with two more charges 50 gals. each of boiling water; leave this till lukewarm. In the second cask place 120 to 130 lbs. of the best white sugar and 1½ lb. tartaric acid; lel the ginger solution from the first cask run on it through a felt filtering bag; stir well with a wooden mixer; when quite cold and settled, it can be bottled. The ginger beer will take about six weeks to be "up." In large establishments yeast is not used.

Ginger Beer Powders.—10 lbs. powdered sugar. 2 lbs. carbonate of soda. ¼ oz. oil of lemon. 2½ lbs. tartaric acid. 2½ ozs. powdered ginger. Mix the whole together, and pass twice through a fine sieve, when it is ready for sale. It is usually done up in small packets. Do not expose this powder to the air, or it will lose its virtue.

Horehound Beer.—To make 6 gals., make an infusion of 1½ oz. of quassia with a dozen sprigs of horehound; boil with part of this liquid 24 Cayenne pods for twenty minutes, then add 6 fluid ozs. of lime-juice and 1½ oz. Spanish juice (dissolved in cold water); strain the mixture and put with it 6 gals. of cold water, with 2 lbs. brown sugar, coloring with burnt sugar; allow the whole to work four days. Now take 2 qts. of it, and warm it rather warmer than new milk, and mix with this 8 tablespoonfuls of good brewers' yeast, and stand it in a warm place till in

* From the *Chicago Confectioner*.

a brisk state of fermentation; mix it with the rest of the liquor, and in a few hours it will be all in full work. Give it a stir twice a day for the first two days to promote fermentation; keep it from contact with cold air for the following two days, and skim the top off as it gets yeasty. The beer must be now drawn off as clear as possible into a clean vessel by passing it through a filtering bag. Clean the tub well, and return the liquid to it, and add ½ drachm (pure) dissolved isinglass; stir the whole well together, and put a cloth over the tub, and also a lid on it. to exclude the air as much as possible; in 30 hours the beer may be bottled off. In summer this will be ripe and fit to drink in eight days. A superior quality may be made by putting a small piece of sugar into each bottle just before corking.

Hop Beer.—4 lbs. sugar. Water q. s. 6 ozs. hops. 4 ozs. ginger, bruised. Boil the hops for three hours with 5 quarts of water, then strain; add 5 more quarts of water and the ginger; boil a little longer, again strain, add the sugar, and when lukewarm, add 1 pint of yeast. After twenty-four hours it will be ready for bottling.

Imperial Pop.—1½ gal. boiling water. 1½ lb. best white sugar. 1 oz. best ginger. 1 oz. lemon juice. When cool, strain and ferment with 1 oz. of yeast, and bottle.

Lemonade.—Proceed as for ginger ale, flavoring with essence of lemon to taste.

Lemon Beer.—1 lb. sugar. 1 lemon sliced. 1 teacupful yeast. 1 gal. boiling water. 1 oz. ginger, bruised. Let it stand twelve to twenty hours, after which it may be bottled.

Mead (*Metheglin*).—10 gals. water. 2 lemons, cut in slices. 2 gals. honey. A handful dried ginger root. Mix altogether, and boil one-half hour, carefully skimming all the time. While boiling, add 2 ozs. hops. Remove from the fire, and while the liquid is lukewarm, add a strong yeast, and put into a cask to work for about three weeks, when it is fit for use.

Mead.—1 gal. water. 3 lbs. strained honey. Boil about a half-hour, adding to it ½ oz. hops, skim carefully, and drain the skimmings through a hair sieve, returning what runs through. Remove from the fire, and when the liquid is lukewarm, stir into it ½ pt. yeast, which is sufficient for 9 gals. mead. Put into a cask and let it work over, filling it up until fermentation subsides. Put a strong paper over the bung-hole. This mead may be flavored with spices while boiling, and makes a delicious summer drink.

Molasses Beer (1).—1 lb. brown sugar. 1 oz. bruised ginger. 1 lb. molasses. ½ oz. hops. Boil for a few minutes with 3 qts. of water, strain and add 5 qts. of water and a spoonful of yeast; let this work all night, and bottle in the morning.

Nettle Beer.—1 pk. green nettles. 1 handful dandelion. 1 oz. ginger. 1 oz. yeast. 1 handful colts-foot. 2 lbs. brown sugar. 1 oz. cream tartar. 3 gals. boiling water. Infuse the herbs in the boiling water, and when cold strain the liquor. In it dissolve the cream of tartar and sugar, adding the yeast and bruised ginger. Let the whole work about twelve hours, skim the liquor carefully, and bottle in champagne bottles. Close tightly with good corks softened in boiling water, and tie the corks down. After a few days the beer is ready for use.

Sarsaparilla Beer.—Take of compound syrup of sarsaparilla, 1 pt.; good pale ale, 7 pts.; use no yeast.

Spruce Beer.—2 ozs. hops. 10 gals. water. 2 ozs chip sassafras. Boil half an hour, strain and add 7 lbs. brown sugar. 1 oz. essence of ginger. 1 oz. essence of spruce. ½ oz. ground pimento. Put into a cask, and cool, add 1½ pt. yeast, let stand twenty-four hours, and bottle.

Summer Beer.—2 lbs. white sugar 2 tablespoons cornstarch, mixed smooth in a little water 2 qts. water. 2 ozs. tartaric acid. 2 whites of eggs, beaten. Put over the fire and boil two minutes; when cold flavor with wintergreen, and bottle. When wanted for use, dissolve in half a glass of cold water, ⅓ teaspoon of soda, and pour into it 2 tablespoons of the mixture. It will foam to the top of the glass.

Root Beer.—1 oz. sassafras. 1 oz. yellow-dock. ½ oz. wild cherry bark. 3 qts. molasses. 1 oz. allspice. 1 oz. wintergreen. ¼ oz. hops. ½ oz. coriander seed. Pour boiling water on these ingredients, and let them stand for twenty-four hours; filter and add ½ pt. yeast. It is ready for use the next day.

Cultivation of the Sumac Tree in Italy.

THE leaves of the sumac tree are extensively used throughout Europe for tanning purposes, and a large amount of care and attention is expended on the cultivation of the tree in Italy, with considerable profit to the planters.* It thrives best, says the *Journal of the Society of Arts*, in southern exposures and hot temperature; its life is from twenty-five to fifty years, according to the conditions of the ground, climate, and culture. It spreads through shoots rising from the bottom of the tree, and it is for this reason that plants two or three years old are selected for transplanting; the price for which they are to be obtained in Italy is 50 centimes per 100.

In preparing a summer plantation, ditches are dug in the ground about three feet three inches apart, with a breadth and depth of about seventeen inches.

In stony ground, the plant is set in holes, the shoots are placed at a distance of about three feet from each other, so that every hectare (2½ acres) will have 10,000 trees. In digging the ditches, and more especially the holes, great care is always taken to prevent water remaining in the bottom, and, when there are no other means to provide against it, the ground is cut transversely.

The tree does not flourish in heavy or damp ground, especially when the substratum is impermeable.

The plantation is made in December, and, then, during the first year, the ground is dug up from four to six times, to preserve it from weeds; manure is but sparingly used. The first digging, which is the deepest, is made in January, and the following in March, May, June, August, and October.

In September of the first year, the leaves are stripped off with the hands, a little before their falling.

It is better, however, not to touch the young bark, but to allow them to fall off naturally.

Young trees are sometimes too quickly stripped and damaged, while the crop of leaves will bring, when sold, half the price of that obtained in the following years in which the sumac ground is dug over more frequently—this is done between December and January and March and May, when the earth is heaped up around the stem, at the time of the first digging, and then smoothed down.

In Sicily, they heap up the earth among plants, cultivated as vines, to ventilate it by increasing the surface through hills, to make the running off of water easy, and to facilitate the future transplantings.

In the times of the greatest dryness, the hills are always levelled. In the second year, open spaces left by dead plants are filled up.

The harvest is made when the leaves have acquired all their development and consistence, and are about to change color. It takes place between July and August, yet before the month of May the leaves of the lower branches grow yellow and fall, and these are also gathered.

Usually, in collecting the crops, secondary branches are cut off, leaving only the trunk of the tree for the new buds. Some planters strip off the leaves by hand in July, and lop the trees in December, but this has the disadvantage of causing the new buds to grow too soft and the leaves are too flabby.

The branches are either left in bundles on the ground for two or three days, after which they are carried to the thrashing floor; or they are brought at once to the thrashing floor, where, after two or three days, according to the season, they are ready for thrashing, and are beaten out with flails or by means of horses.

When beaten with flails, the twig is fairer and less torn, and is sold in bales, but, when trodden out by horses, it

* The attention of our readers in suitable country localities is directed to this article. We have had several inquiries already on this subject, and think that the above article will give sufficient information.—ED. N. R.

is crushed into minute particles before it is exposed for sale. When long leaves are required for the bales, the bales are thrashed early in the morning, before the heat of day has dried up the leaves; but, for crushing, the operation must be done in the hottest hours, when the branches already thrashed once are thrashed again. Square linen sheets, six feet square, with a ring in each corner, to pass a rope through, are generally used for carrying the dried branches and leaves to the storehouse.

The leaves for bales are carried to the storehouses, and the rest to the mill, which is similar to that used for olives. After being ground, the large lumps are sifted out, and the branches and other impurities thrown away, and the leaves, if any, are ground again. In this work, the leaf loses a seventh part of its original weight. The trashing floor is always kept in good condition, paved, and covered with cement or bricks, and the storehouse is generally exposed to the sun.

When the sumac becomes old and its verdure scanty, another crop is planted, and for this the vineyard is especially adapted by the previous preparation.

Glucose from Cassava.

FOR some time past rumors have been current here of a company being in process of formation with a view of manufacturing glucose from cassava, but, after careful inquiry, we have not been able to trace them to a reliable source. We have no hesitation, however, says the *Confectioner's Journal*, in saying that such a company is contemplated at an early day, and this fact adds interest to the plant, which seems destined to take a prominent part in the development of the confectionery trade, and calls for more than a passing notice from us, as to the nature of cassava, its *habitat* and its merits as a saccharine producing material. All confectioners know that glucose has become a very important article of commerce during the past few years, and the consumption of it has reached 20,000 tons in this country alone, and a large quantity is annually exported. It has been made heretofore from corn, which has advanced so much this year as to make this much needed article quite expensive. The demand for it is very large, and exceeds the supply. Heretofore the profits of manufacturing it have been very great at the rate paid for corn during the past few years. During the recent trial of a law-suit in New York, it came out in evidence that the Buffalo Grape-Sugar Company sold to one agency $100,000 worth of grape-sugar, or glucose, per month. That Company is now using nearly 6,000 bushels of corn every day in the week. A bushel of corn weighing fifty-six pounds will yield thirty pounds of sugar, or glucose: the average net-profit on a bushel of corn is between forty and fifty cents, since when the price has materially advanced. This would make the average profit of the Buffalo Grape-Sugar Company over $1,000,000 a year, on a capital now invested of $4,000,000. The manufactured glucose is used chiefly for making table syrups, candies, for brewing purposes, as food for bees, and making artificial honey. It is estimated that 11,000,000 bushels of corn will be used this year by the various manufactories of this product in this country. The average production of corn in the States of Pennsylvania, New York, Ohio, Michigan, and Illinois is thirty-five bushels to the acre. The amount of glucose produced from one bushel is 30 pounds, or 1.050 pounds to the acre. Well authenticated evidence is at hand to the effect that twenty tons of cassava to the acre is no unusual crop in Florida. This would, at 56 pounds to the bushel, give a yield of over 700 bushels per acre, and, at the rate of 30 pounds of glucose per bushel, would produce over 21,000 pounds of glucose per acre. A comparison of the yield of glucose from corn and cassava from a large area is as follows: 1,000 acres of corn yield about five hundred tons of glucose; 1,000 acres of cassava yield about 10,000 tons of glucose.

The method of cultivation is generally as follows: The ground is prepared as for planting corn, the seed (which consists of a section of the stalk containing an eye) is set in the sandy soil, spaced about two feet, in rows three feet apart. When about eighteen inches high, the field is cultivated in order to raise the soil about the base of the stalk, which affords a better support to the plant.

The leaves of the branching top shade the ground, and prevent the formation of weeds and evaporation of surface-moisture. No irrigation is required, as the moisture is continually supplied to the tubers by capillary attraction. The tubers grow somewhat similar to the sweet-potato, radiating from the base of the plant, and lying generally horizontal. They may be utilized in about six months after planting, and will continue to grow without deterioration for a period of two years and upwards, developing to such an extent that tubers weighing from sixty to eighty pounds have frequently been taken from the soil. The harvesting of the crop is very simple. The stalk is raised, and tubers extracted, by simply pulling them from the loose soil. The plant may be again inserted, when it will produce new roots. The earth in this case is the storehouse from which the supply is extracted, as required, with the advantage of the crop increasing in value as long as it remains therein, whereas, in corn, there is a season for harvesting, storing, handling, and rehandling before it comes to the hands of the manufacturer.

Cassava may be removed from the ground any day in the 365, and carried to the mill for direct treatment. For many years the root has been raised in Florida, and used for many purposes. The plants are natives of South America. The roots (tubers) may be preserved for food purposes, by being simply cleaned, sliced, and dried; from such dried slices, manioc or cassava meal, used for cassava bread, etc., is prepared by simply grating. The starch is separated and prepared for food under the name of Brazilian arrow-root; and this, when agglomerated together into pellets on hot plates, forms the tapioca of commerce.

The glucose made of cassava is of fine body and flavor.

Sulphur Mines in Sicily.

THE mining industry of Sicily is entirely confined to the production of sulphur, in which mineral the island is very rich. The sulphur country lies to the south of the Madona chain of mountains, embracing nearly the entire provinces of Caltanisetta and Girgenti to the seaboard, and part of that of Catania; in addition to these, there is a group of mines in the south of the province of Palermo. The principal centres of this industry are at the mines of Caltanisetta, Castrogiovanni, Montedoro, San Cataldo, Serradifalco, Sommatino, Valguanero, and Villarosa, in the province of Caltanisetta; Aragona, Casteltermini, Cattolica, Cianciana, Comitini, Favara, Grotte, and Racalmuto, in the province of Girgenti; and Lercava in that of Palermo. Vice-Consul Rose states that sulphur is met with at a great variety of depths below the surface of the land, in seams varying considerably in thickness. In very rich lands, the veins do not average more than 6½ to 27 feet in thickness, with sterile strata, from a few inches to three feet and over, intervening, while in those less productive, the sulphur seems to lie separated by barren strata of much greater density. The rock containing the mineral is detached from the mass by the use of a sharp-pointed pick-axe, weighing about fifteen pounds, and brought to the mouth of the shaft, which is like an inclined plane running down the earth with steep steps roughly cut in the rock, forming almost invariably the only means of access to the works at the bottom of the mines.

The ore is excavated by men, assisted by small gangs of boys working under them, who carry heavy pieces of rock to the surface as it is broken up by the miners, and deposit them in localities allotted to each pickman, where the ore is piled up in large heaps preparatory to its being measured, to ascertain the quantity of "cassa" excavated by each man. The "cassa" is the measure by which the quantity of sulphur ore dug in Sicilian mines is reckoned when paying the miners for their labor, but differs in dimensions in different mining districts of the island. The boys employed in transporting the mineral carry from forty to sixty pounds weight, according to their ages, which range from ten to eighteen years, from pits often over 275

feet deep, making twenty to forty journeys a day. Water is frequently met with before reaching a seam of sulphur, and, up to the present, it has been one of the greatest obstacles in the way of mining engineering in Sicily, greatly increasing the cost of working. The depth of 190 feet is rarely obtained without water oozing through imperceptible fissures in the rock, and this frequently stops all operations by the submerging of the works. To provide against this, the old-fashioned hand-pump was used, and this gradually giving way to steam power, has reduced to a minimum the fear of mishaps occurring by flooding. It is very rarely that any explosions occur in the Sicilian mines; small earthenware lamps containing oil, the flames of which are left naked, being used in the mines without the slightest apprehension of accidents happening. Safety-lamps are not known in Sicily.

The following is the method employed in smelting the ore, after it has been separated from the rock by heat or steam: When a sufficient quantity of the ore is collected on the surface to form a pile—called, with the masonry built around it to keep the liquid sulphur from escaping, a "calcarone"—the mass, which is heaped up high, is set fire to by igniting straw impregnated with sulphur placed on top of the calcarone or kiln, for the purpose, and the kiln left to burn, the sulphur once ignited acting as its own fuel. Seven to eight days after, the first sulphurous fumes are emitted, which indicate that the mass has caught fire, and, when ample time has been allowed for a certain quantity of the ore to melt, the masonry mentioned above is pierced, and the liquid sulphur, of a deep amber color, is permitted to run out into square wooden moulds, called "belate," the sulphur, on cooling, hardening and turning to a bright yellow. The fusing by this process, in which only a small quantity of the ore is lost, may last from thirty to ninety days, the time occupied depending on the size of the kiln. There are several qualities of sulphur known to the trade—first quality, best second, good second, current second, best third, good third, and current third. The several qualities are not determined by test, but simply by the purity of color; the brighter the yellow, the more free is the quality considered of extraneous matter. The total quantity annually smelted may be estimated at 390,000 tons, and its value, when distributed at the shipping ports of Palermo, Catania, Licata, Porto Enpedocle (Girgenti), and Terranova, at £1,765,000. The wages of miners and others engaged in the production of sulphur, range from one shilling and four pence to two shillings per day of six to eight hours. Pickmen are almost invariably paid according to the quantity of mineral they excavate.—*Journ. of the Society of Arts.*

An Australian Bismuth Mine.

DR. J. R. M. ROBERTSON who left Australia in October of last year, on Feb. 16th read a paper on "Bismuth and Tin in Australia" before the Geological Society of Glasgow. It has been published in the *North British Daily Mail.* What he tells of Australian bismuth is of some interest.

The North-eastern district of New South Wales is called New England. The backbone of the country is of granite, which is replaced on the northern or Queensland border by felsites and transmuted rocks. At the irregular line of junction, some claims were recently taken up for the purpose of prospecting for tin. Of this metal, none was found, but quartz veins disclosed a variable quantity of coarse gold and an unknown mineral, which the Government chemist pronounced to be "native bismuth." The bulk of the bismuth of commerce is a by-product obtained in the treatment of zinc, cobalt, and silver ores, with which it is associated. The principal sources of the metal are Saxony, Bolivia, and Mexico.

Some native metal has been obtained from Bolivia, and in smaller quantities from Cornwall and South Australia, but, until the discovery of these new mines, it was a mineral curiosity.

The entire sale of bismuth has for years been monopolized by a few London brokers, known as the "bismuth ring," a close and conservative institution, formed for the purpose of controlling the supply and price of bismuth, from whom, says Dr. Robertson, it is impossible to extract any information as to the source of the metal, its occurrence, or the resources of the mines. Under the tender mercies of this admirable institution, the original opinions held by the Australian prospectors became considerably modified.

Dr. Robertson described carefully the geological features of the place where the bismuth is found, and the various forms in which it occurs: (1) Native metal in irregular bunches or nests throughout the substance of the quartz, the masses weighing from ½ lb. to 50 lbs.; (2) as oxide forming 30 to 50 per cent of the soft casing of the quartz veins; (3) in characteristic leaden-gray acicular crystals of sulphuret, though in smaller quantities.

In nearly all the lodes, large quantities of molybdenite occur, indeed this mineral seems always to accompany the bismuth. At present it is thrown aside as worthless.

Dr. Robertson went on to say:

When the London agent of the mining company owning the bismuth deposits mooted the fact that he was about to receive a consignment of several tons of bismuth in large pieces, his statement was ridiculed, but, on the arrival of the metal, the "ring" became alarmed. Failing to obtain the mine upon their own terms, they resolved not to purchase the ores, or to purchase them at their own price, and by these means either to quash the company or to retain the enormous profits which they had contrived to extract from consumers of the metal, such as manufacturers of bismuth subnitrate as a medicine, or cosmetic preparations in one or other of their many forms. For these, and to a lesser extent for type-founding purposes, the world's demands are at present satisfied by an annual production of seventy tons or so.

So pure is the produce of the mine under review that I have been informed by those who have had extensive experiments made, that a charge of £15 per ton will amply repay the smelter for his trouble. Yet that useful public institution—I mean the "bismuth ring"—offers a price for the ore that will leave them the trifling profit of about £450 per ton. So far as I can learn, this is the only mine of bismuth in the world. Nowhere else is the metal found in the same condition, or to the same extent, or where it can be raised with the same facility, and at the same small expense. The lodes already exposed could, with a small expenditure on wages only, produce sufficient ore to supply all present demands, and at a price which, at the present low market value of bismuth, 6*sh.* 8*d.* per lb., would leave a profit of from £500 to £600 per ton, or a gross profit which would more than pay the total cost of the mine in six months! It is a novel occupation, however, and because of its novelty, is correspondingly avoided by those directly interested in metalliferous pursuits. Were it not for its intense novelty, and the trifling quantity of capital required, one might suggest the formation of a "bismuth ring for the Second City of the Empire," to divide with London the enormous profits accruing from the mining, manufacture, and sale of bismuth.—*The Chem. and Drug.*

Estimation of Tannin.*

OF the several methods tested in this laboratory for the quantitative estimation of tannin in the different tanning materials found in the market, the volumetric one proposed by Estcourt, and modified by Löwenthal, has thus far given most satisfaction.

This method depends upon the oxidation of a tannin solution by an acid permanganate solution, a definite amount of indigo being added to serve as indicator in the titration. In order to obtain as nearly as possible the reducing coefficient of the tannin of sumac leaves, about 100 grams of the latter, after being powdered, were treated as follows, with a view of procuring a sample of nearly pure tannin. An extract was made with hot water, which, after being evaporated to a small bulk, was added to

* From the *Annual Report of the Commissioner of Agriculture for the Year* 1880. 8vo. Washington, 1881.

enough alcohol to make the mixture about 80 per cent alcohol; after filtering, this alcohol was in turn removed by evaporation, and the diluted filtered solution treated with normal cupric acetate, which gave a soft brown precipitate of a compound of tannin and copper.

This precipitate, after being separated and washed several times with water, was suspended in water and decomposed with sulphuretted hydrogen.

The resulting cupric sulphide was filtered from the solution, the filtrate slightly acidified with sulphuric acid, and, after being neutralized by means of barium hydrate and filtered, was evaporated nearly to dryness, dissolved in 90 per cent alcohol, and then treated with sufficient ether to form about a 16 per cent ether mixture; a dark-colored precipitate of small amount was filtered off, and the solution evaporated upon glass plates.

The dried residue was scraped from the glass in scales of a dark-yellow color. This sample yielded 0.01 per cent of ash, 0.83 per cent of organic impurity, 7.25 per cent water at 100° C.

After making deductions for these amounts, 1 gram of pure tannin required for oxidation 0.6239 gram of potassium permanganate, 1 gram of the latter requiring 1.6028 grams of tannin.

A sample of gallotannic acid, obtained in the market, was also tested in the same way, and, after making similar deductions for impurities, 1 gram of the tannin required for oxidation 0.7153 gram of potassium permanganate, 1 gram of the latter requiring 1.3981 gram of tannin. In carrying out these titrations, a water solution containing 0.5 gram of tannin in 1,000 grams was used, 25 grams of the solution being taken for each titration, to which were added 20 *cc.* of a solution of potassium sulphindylate, containing about 7 grams of the salt per liter, about 1 liter of water and a few drops of sulphuric acid.

This was titrated with a one-fortieth normal solution of potassium permanganate, this concentration giving much more constant results than stronger ones.

In the above formula the indigo solution requires for oxidation about one-third of the entire volume of potassium permanganate used.

This relation has been found to work as well as one in which the indigo present would require two-thirds of the volume of potassium permanganate used, the latter being given by some writers as the lowest ratio in which the indigo should be present in order to secure the complete oxidation of the tannin before the solution becomes bleached.

When solutions of the above strength are used, and the titrations carried out very slowly, taking at least five or six minutes for each one, this process serves as one of the best for the estimation of commercial tanning materials; the end reaction, indicated by a change of color from indigo-blue to straw-yellow, being quite distinct.

In testing a sample of bark or leaves, a weight of from two to five grams should be percolated with petroleum naphtha (boiling below 70° C.) in order to first remove as many substances not tannin as possible, and then the tannin extract should be made by percolating with eighty per cent alcohol, the alcohol evaporated and replaced by water, this solution filtered and diluted to two hundred or five hundred cubic centimeters. Ten cubic centimeters of this solution are then titrated under the same conditions as above described. The amount of permanganate required, less the amount necessary for oxidation of the indigo used, is the amount necessary for the oxidation of all reducing substances present in the extract.

One hundred cubic centimeters of the latter are now treated with ammonio-cupric or ammonio-zinc acetate, and the tannin precipitated as a compound of tannin and copper or zinc.

After standing a few minutes, the precipitate is filtered off, and the filtrate titrated in the same manner as the original solution.

The amount of permanganate required to oxidize the entire oxidizable material of the extract, less the amount necessary for the oxidation after the removal of the tannin, gives the amount reduced by the tannin alone.

Formulas for Well-Known Proprietary Medicines.

THE following formulas are given by *The Drug Mill:*

Dr. Pierce's Golden Medical Discovery (Nelson).

Fluid extract of cinchona	16 ounces.
" " " columbo	4 "
" " " guaiac	8 "
" " " licorice	4 "
Tincture of opium	1 ounce.
Podophyllin (resinoid)	120 grains.
Glycerin	6 pts. fluid.
Alcohol	q. s.

Dissolve the podophyllin in the alcohol, and add the rest of the ingredients. Mix them. Dose, a teaspoonful.

Dr. Pierce's Favorite Prescription (Hager).

Savin	10 grams.
Agaric	5 "
Cinnamon	5 "
Peruvian bark	10 "
Make a decoction of	220 "
And add gum arabic	10 "
Sugar	5 "
Tincture of digitalis	2 "
Tincture of opium	2 "
Oil of anise	8 drops.
Dissolve in alcohol	45 grams.

Walker's Vinegar Bitters.

Powdered golden seal	1 ounce.
" aloes (cape)	½ "
Water	16 ounces.

Bottle up, tie the cork down tightly. Ready for use in ten days.

Coe's Dyspepsia Cure (Nelson).

Powdered rhubarb	2 drachms.
Fluid extract of gentian	3 "
Peppermint water	7½ ounces.
Bicarbonate of sodium	6 drachms.

Mix them. Dose, a teaspoonful half an hour before meals.

Piso's Consumption Cure (Nelson).

Syrup of morphia (one grain to ounce)	4 ounces.
Chloroform (Squibb's)	2 fl. drms.
Glycerin	3¼ "
Hydrocyanic acid—dilute	1 drachm.
Chlorophyll—q. s.—to tint.	

Mix the chloroform with the glycerin. Add the other ingredients and mix. Adult dose, a teaspoonful.

Ayers' Cherry Pectoral.

Syrup of wild cherry	6 drachms.
Syrup of squills	3 "
Tincture of bloodroot	2 "
Sweet spirit of nitre	2 "
Wine of antimony	3 "
Wine of ipecac	3 "
Syrup	1½ ounces.
Acetate of morphia	2 grains.
Spirit of bitter almonds	1 drachm.

Mix.

Pleis' Fit Powders.

Bromide of potassium	15 grains.
Powdered gentian	5 "

Mix—make one powder.

Hall's Hair Renewer.

Precipitated sulphur	1 drachm.
Acetate of lead	1 "
Salt (common)	2 drachms.
Glycerin	8 fl. ounces.
Bay rum	2 "
Jamaica rum	4 "
Water	16 "

Shake before using.

Ayers' Sarsaparilla.

Fluid extract of sarsaparilla	3 ounces.
Fluid extract stillingia	3 "
Fluid extract yellow dock	2 "
Fluid extract may-apple	2 "
Sugar	1 ounce.
Iodide of potassium	90 grains.
Iodide of iron	10 "

Mix them.

Hamlin's Wizard Oil. (J. J. Pierson, Ph.C.)

Spirit of camphor	1 ounce.
Spirit of ammonia	½ "
Oil of sassafras	½ "
Oil of cloves	2 drachms.
Chloroform	½ ounce.
Oil of turpentine	½ "

Alcohol q. s., to make 5 ounces.
Mix them.

Radway's Ready Relief. (J. J. Pierson, Ph.C.)

Soap liniment, about	1½ ounces.
Tincture of capsicum, about	½ ounce.
Water of ammonia, about	½ "
Alcohol	½ "

Mix them.

Flagg's Relief. (J. J. Pierson, Ph.C.)

Oil of cloves, about	1 drachm.
Oil of sassafras, about	2 drachms.
Spirit of camphor, about	1½ "

Mix.

Perry Davis' Pain Killer. (J. J. Pierson, Ph.C.)

Spirit of camphor, about	2 ounces.
Tincture of camphor, about	1 "
Tincture of guaiac, about	1½ "
Tincture of myrrh, about	½ "
Alcohol, color, about	3 "

Canada Liniment.

Water of ammonia	1 ounce.
Olive oil	1 "
Oil of turpentine	1 "
Alcohol	1 "
Oil of peppermint	½ "

Mix them

Chamberlain's Relief. (J. J. Pierson, Ph.C.)

Tincture of capsicum, about	1 ounce.
Spirit of camphor, about	¾ "
Tincture of guaiac, about	¼ "
Color tincture, to make	2 ounces.

Mix them.

Kellog's Red Drops.

Spirit of camphor	2 ounces.
Spirit of origanum	¼ ounce.
Oil of sassafras	¼ "
Oil of turpentine	½ "
Color tincture, about	4 ounces.

Mix them.

Tobias' Venetian Liniment. (Hager.)

Spirit of ammonia	5 parts.
Camphor	2 "
Tincture of capsicum	5
Alcohol	34 "
Water	10 "

Mix them.

Injection Brou. (Hager.)

Distilled water	100.00 parts.
Sulphate of zinc	0.50 "
Acetate of lead	200.00 "
Tincture of catechu	200.00 "
Wine of opium	200.00 "

Mix them.

Holloway's Pills.

Aloes powdered	36 grains.
Jalap "	18 "
Ginger "	18 "
Myrrh "	18 "

Red Horse Condition Powders.

Fœnugreek, powdered	2 ounces.
Gentian, "	2 "
Black antimony "	2 "
Capsicum "	2 "
Cream of tartar "	2 "
Rosin "	2 "
Saltpetre "	2 "
Myrrh "	1 ounce.
Ginger "	1 "

Mix them.

Tobias' Derby Condition Powders. (Hager.)

Tartar emetic powdered	2 grams.
Crude antimony	20 "
Sulphur	10 "
Saltpetre	10 "
Fœnugreek, powdered	40 "
Juniper berries	20 "

Mix them.

Thompson's Eye Water.

Sulphate of copper	10 grains.
Sulphate of zinc	40 "
Rose water	2 pints.
Tincture of saffron	4 drachms.
Tincture of camphor	4 "

Mix and filter.

Sage's Catarrh Remedy. (Hager.)

Powdered golden seal	5 parts.
Indigo	½ part.
Powdered camphor	2 parts.
Carbolic acid	2 "
Salt (common)	50 "

Pepsin for Sea-Sickness.

PEPSIN has been recommended again for sea-sickness. This time the information comes from the "*Industrie-Blätter*," where we read that "Finzelberg's pepsin has been employed so far in twenty cases of sea-sickness with best results, but only in the case of those who had never been to sea before. The persons in question, as soon as the premonitary symptoms of sea-sickness made their appearance, took as much as would go on the point of a knife and drank with it a glass of water containing five drops of hydrochloric acid. The dose was repeated several times daily, particularly before and after eating." We give the above for what it is worth, but are strongly inclined to believe, that, if Finzelberg's pepsin has the faculty of successfully combating this distressing sickness, there are other makers' pepsins that will do the same thing, or perhaps do it still better.

Synonyms.

VICK tells the following story of a society of archæologists who recently held a meeting at a village in Shropshire, called Church Stretton. At the first dinner at the village inn, a large fruit pie was produced. "What is it made of?" asked a visitor. "Blaeberries, sir," said the first waiter. "Blueberries, sir," said the second. "Whinberries," said the pretty running maid. "Bilberries," said Professor Babington. "Wortleberries," said another botanist. "Huckleberries," said an American visitor. Here the first waiter in despair came to the most learned looking of the guests and said: "Sir, they say you are a good herbalist; what is the correct name of these berries?" "Vaccinium Myrtillus," was the answer. During the rest of the week the terrible waiter persisted in calling bilberry tart "*vaccination murderers.*"

BIBLIOGRAPHY.

MATERIA MEDICA AND THERAPEUTICS. Inorganic Substances. By CHARLES D. F. PHILLIPS, M.D., etc. Edited and adapted to the U. S. Pharmacopœia by LAURENCE JOHNSON, A.M., M.D. New York: William Wood & Co., 1882.

THE first part of this work, relating to remedies of organic origin and edited by Dr. Piffard, was published in the Library of Standard Medical Authors, in 1879. The present volume is a part of the series for this year. The long interval which has occurred has been owing to an injury received by Dr. Phillips in 1877.

The contents relate to oxygen, ozone, and compressed air, nitrogen, hydrogen, carbon (charcoal), sulphur and its compounds; phosphorus, iodine and its compounds, bromium and its compounds, chlorine, water, sea-bathing, mineral water and baths. The acids considered embrace acetic, carbonic, citric, hydrochloric, nitric, phosphoric, sulphuric and sulphurous, tartaric. The alkaline sulphites and hyposulphites and the compounds of ammonia, alumina and antimony complete the work.

A notable feature of the text is the extensive use made by the author of recently published observations in medical journals, and this fact will probably give to the work its chief value.

THE INCIDENTAL EFFECTS OF DRUGS. A Pharmacological and Clinical Hand-Book. By DR. L. LEWIN. Translated by W. T. ALEXANDER, M.D. New York: Wm. Wood & Co., 1882, 8vo, pp. 239.

THE incidental, accidental, or unexpected effects of drugs have never before been made the subject of a separate treatise, if we except the monograph by Dr. Piffard, which was published a few months since as one of "Wood's Library." Isolated facts bearing upon this question are to be found quite generally scattered through journal literature and occasionally in treatises on therapeutics. Several writers have lately written upon the subject of medicinal rashes and the incidental effects of opium. The iodides and bromides have become pretty well understood, but there remains an extensive field for observation, not only upon the unusual manifestations of activity of certain remedies, but also upon their failure to produce the pharmacodynamic effects ordinarily attributed to them. Those who are interested in this topic will find in Dr. Lewin's work much that is worthy of attention, and there are few practitioners who can afford to be ignorant of the information it contains.

CARBONATED WATERS: A Guide to their Manufacture, with a Treatise on the Purification of Waters, Classification and Manipulation of Syrups, and Preservation of Carbonated Beverages, together with a Large Number of Original and Valuable Recipes. By DAVID SMITH. Edited and Published by W. B. KEELER, Editor of the *National Bottlers' Gazette*. New York: 1882, pp. 63.

THE general character of this work is sufficiently indicated by the above extract from its title page. The information it contains should make it acceptable to every dealer in carbonated beverages. The author and editor both vouch for the reliability of the formulas and directions it contains.

ELECTRICITY IN SURGERY. By JOHN H. BUTLER, M.D. New York: Boericke & Tafel, 1882, pp. 111, 8vo.

THIS is a condensed compilation by the author of a number of articles published by him in different periodicals. It presumes on the part of the reader a knowledge of electrophysics, and relates only to the apparatus and methods employed in the treatment of a variety of surgical affections.

OSTEOLOGY OF SPEOTYTO CUNICULARIA var. HYPOGÆA and of ERIMOPHILLA ALPESTRIS. By R. W. SHUFELDT, First Lieutenant and Assistant Surgeon U. S. Army. Extracted from the *Bulletin of the Survey*, Vol. VI., No. 1. Department of the Interior, Washington, D. C.: 1881, 8vo, pp. 52, pl. iv.

THE common names for the two birds described by the author are the Burrowing Owl and the Horned Lark. These are peculiar to the United States, and have not before, that we are aware, been properly described.

A GENERAL DESCRIPTION AND CLASSIFICATION OF MINERAL SPRINGS IN MISSOURI AND ARKANSAS. By JUAN N. WRIGHT, M.D. St. Louis, 1882, pp. 32.

THE author, who is an analytical chemist, gives brief descriptions of the composition of the waters of some forty-five different springs, containing a notable quantity of inorganic ingredients and directions for reaching them, accommodations for guests, etc.

PROCEEDINGS OF THE FIRST ANNUAL SESSION OF THE ALABAMA PHARMACEUTICAL ASSOCIATION.

THE first meeting of this new association was held at Birmingham, on the 9th of August last. The brief report contains minutes of the two sessions, the constitution and by-laws, and an address to other parmaceutists of the State. O. C. Candidus is President, and S. W. Gillespie, of Birmingham, is Secretary. The second meeting was to have been held in the second Tuesday in May.

NEW COMMERCIAL PLANTS AND DRUGS, No. 5. By THOMAS CHRISTY, F.L.S. London: Christy & Co., 1882. 1*s*.

THIS number of Christy & Co.'s publications contains valuable information in relation to materials which yield tannin. Considerable space is also devoted to drugs of service in medicine and in the arts.

PRELIMINARY OBSERVATIONS ON THE PATHOLOGY OF SEA SICKNESS. By J. A. IRVIN, M.A. Cant., M.D. Dub. Philadelphia: P. Blakiston, Son & Co. 8vo, pp. 13.

THIS is a reprint of an article in *The Lancet* of November last, in which the author expresses the belief that some cases of sea-sickness are due to labyrinthine disturbances.

THE KANSAS CITY REVIEW OF SCIENCE AND INDUSTRY. THIS monthly publication, edited by THEO. S. CASE, has just completed its fifth volume. We have before referred to it as a magazine noted for the good quality of its contents and worthy of general support. It is published in Kansas City, Mo., and costs but $2.50 per annum.

A Pharmaceutical Exhibition in Spain.

AN exhibition, on a large scale, of pharmaceutical preparations, both organic and inorganic, of laboratory appliances, and of works relating to pharmacy, will be opened in Madrid on November 21st, 1882. The exhibition will be under the immediate auspices of the College of Pharmacy of Madrid, and will be presided over by Don Fernandez Izquierdo, to whom all communications should be addressed.

Combination of Quinine Makers.—An announcement has been published lately that the houses of C. F. Böhringer & Sons, of Mannheim, Böhringer & Geyer, of Stuttgart, and the Fabbrica Lombarda di Prodotti Chimici, of Milan, have amalgamated their businesses. Arrangements have been long pending, and, in consequence of the recent sudden decease of Mr. C. H. Böhringer, of Mannheim, have been concluded. Mr. B. Kühn, who has been the London representative of the Milan house, will henceforth represent the combined firms.

Analysts of the New York State Board of Health.—At the meeting of the New York State Board of Health, held in Albany on the 9th of May, the following-named gentlemen were elected Analysts for the ensuing year: Samuel A. Lattimore, Ph.D., Rochester; Willis G. Tucker, Ph.D., Albany; Drs. Frederick Hoffman and J. G. Love, of New York.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

Battle's Bromidia.

EDITORS OF NEW REMEDIES:—I find the following formula, taken, I think, from the NEW REMEDIES, to correspond with Battle's "Bromidia" in physical as well as medical properties. Physicians who formerly prescribed Battle's preparations at my place now use this:

℞ Potassii bromidi,
Chloral hydratis.....āā ʒ iv.
Extracti hyoscyami,
Extracti cannabis indicæ.....āā grs. xvi.
Alcoholis.....fl. ʒ ij.
Aquæ.....q. s. ft O. ij.

JOS. JACOBS.

ATHENS, GA.

Sticky Fly-Paper.

EDITORS OF NEW REMEDIES:—Although in the past five years I have seen a number of recipes for sticky fly-paper, I have found none so cheap and effective as the one given below.

In a tin vessel melt one pound of resin, and then add about two fluid drachms of linseed oil. While the mixture is warm, dip the spatula into it, and spread what adheres to the blade on foolscap paper, after which it may be allowed to cool. I have learned by experience that different samples of resin require different proportions of oil. When the mixture is found to be too hard for spreading, more oil may be added; if too soft, add resin.

A. THOMPSON.

COLUMBUS GROVE, OHIO.

No. 1041.—**Artificial Stearin** (E. C. P.).

This correspondent asks what are the conditions necessary for the union of *stearic acid* and *glycerin* so as to form *stearin* (or propenyl tri-sterate). They are briefly, to heat stearic acid and glycerin, in varying proportions, together in sealed tubes for a number of hours. There are three different stearins, *mono-*, *di-* and *tri-stearin*, the first of which is formed by heating equal parts of glycerin and stearic acid to 200° C. (392° F.), in a sealed tube for 36 hours. The second is formed by heating monostearin with three separate parts of stearic acid to 260° C. (500° F.) for three hours. And the third, by heating monostearin with 15 to 20 parts of stearic acid to 270° C. (518° F.) for three hours.

No. 1042.—**Handbook of Cinchona Cultivation** (A. G. S.).

The following work is announced as being in preparation and soon to be issued: *Handbook of Cinchona Culture*. By Karel Wessel van Gorkom, formerly director of the Government Cinchona Plantation in Java. Translated by Benjamin Daydon Jackson, Botanical Secretary of the Linnæan Society of London. With a colored illustration. The price will be £2 and only 250 copies will be printed. Orders should be sent at once to Truebner & Co., London.

A short account, giving especially the history of the origin and progress of the cultivation is contained in *C. R. Markham, Peruvian Bark*, 8vo, London, 1880, which contains in an appendix the whole literature relating to cinchona, and this book will therefore be of great value to you.

No. 1043.—**Parchment Paper.**

A Chicago correspondent in answer to query 1,006, in our February issue, informs us that G. Heinemann & Co., of that city, also manufacture parchment paper.

No. 1044.—**Paper-Barrels** (A. D.).

Petroleum *has* been exported from New York in barrels made of papier-maché; they are said to answer the purpose admirably, as they do not break so easily as wooden casks, and are not apt to leak, as they are not made up of staves.

No. 1045.—**Corn Remedy** (J. W.).

One of the latest which we have seen recommended is the following: Apply a mixture composed of

Carbolic acid..... 1 part.
Distilled water.....10 parts.
Glycerin.....10 "
Soap liniment.....10 "

by means of a piece of cloth or lint, and cover it well with sheet-rubber, so that no evaporation may take place. The corn may be detached, often on the following morning already. Inflamed and swelled bunions may be treated in the same manner, but, in place of the above mixture, another should be applied, composed of dilute solution of subacetate of lead, to which may be added, under circumstances, some preparation of opium.

No. 1046.—**Ptomaines** (R. McC.).

This name (from πτῶμα, fall; mishap; "cadaver") has been applied by Prof. Selmi to some alkaloids which he has found to be produced in animal bodies after death. The discovery produced considerable excitement in medico-legal circles, because the development of these poisonous organic compounds was believed to endanger the correctness or reliability of toxicological analyses for poisonous alkaloids administered with criminal intent. In general, these bodies answer to the tests for alkaloids; yet the specific chemical and physiological reactions of the more important poisonous alkaloids, such as morphia, strychnia, brucia, etc., are so characteristic that the proof of the presence of the latter cannot, under ordinary circumstances, be vitiated by the presence of ptomaines. Brouardel and Boutmy recently announced (*Comptes Rendus*, 1881, 92, 1056) that ptomaines may be distinguished from vegetable alkaloids by their different behavior towards ferricyanide of potassium, the former (ptomaines) reducing the latter to ferrocyanide, while the vegetable alkaloids did not react with it, except morphine, which reduces strongly, and veratrine, which reduces slightly. This statement, however, has been disproved by later investigations, among which we may quote those of Heinrich Beckurts (*Arch. d. Pharm.*, February, 1882). The latter found that morphine and colchicin reduced ferricyanide strongly; less energetic, but still quite distinct, is the reducing power of aconitine (German and English), brucine, coniine, digitaline, nicotine, strychnine, papaverine, narceine, codeine, veratrine (the latter, as already noticed by Brouardel and Boutmy), and picrotoxin. Atropine did not reduce. These results show that the alleged distinguishing reaction is unreliable. Before the nature of the ptomaines, which are supposed by A. Casali to be amido-acids, is cleared up, reliable reagents for distinguishing them from other bodies will scarcely be established.

No. 1047.—**Tannin and Iron Color in Liquors** (G. M. F.).

This correspondent writes: "I have a lot of old Medford rum which has become discolored by having the bung, which had nails in it, falling into the cask. What can I do with it to rid it of the dark color without injuring it for use? I cannot think of any treatment that would not impair the article itself. Have tried adding a few drops of solution

of chlorinated soda to a half-pint of the rum, which had the effect of lightening the color *some*."

We have received inquiries of this kind before, but could not answer them as well as we would have desired. Since then, however, we have made a number of experiments, and have found a method which will answer tolerably well; in fact, we know of none, short of redistilling, which will restore the light color as readily as this without injuring the flavor. It depends upon the principle that a forming precipitate will often carry down with it the coloring matter in *solution* in a liquid, or matters held in *suspension*, but in such an impalpable condition that they refuse to settle.

The discolored rum or whiskey or brandy is thoroughly mixed with a *very small* quantity of solution of chloride of iron (ferric chloride), best in form of tincture of iron. Next is added a solution of ferrocyanide of potassium (one part of salt to ten parts of water) in minute quantities at a time, shaking or stirring after each addition, until the dark-blue precipitate just begins to assume a bright-greenish tint. This is best observed by taking a little of the liquid in a test-tube, and examining its color by turning it up and down. To avoid too much of an excess of the ferrocyanide, it is best to make a preliminary test between the tincture of iron and the solution of ferrocyanide, so that their relationship may be determined. A burette will be convenient for making this test. If much of an excess of ferrocyanide is added, the color of the liquid will be a muddy grass-green. The green is formed in this way: after the tincture of iron has been mixed with the liquid, the subsequent addition of the ferrocyanide produces a precipitate of Prussian blue, which is very finely divided. During its formation, it absorbs the foreign coloring matter, and, if it were practicable to hit the point of mutual saturation between the iron and ferrocyanide *exactly* and to filter out the *whole* of the precipitate, the resulting liquid would probably be colorless or nearly so. Yet it is better to have a slight excess of ferrocyanide present than of iron. The ferrocyanide imparts to the liquid a slightly yellowish tint, which is, however, modified to green by the Prussian blue. The use of the ferrocyanide is absolutely harmless; in the first place, only a small quantity is added, and only a trace remains in the final liquid. The salt is medicinally inert, having been taken in large and small doses without visible effect.

When it is supposed that the proper point has been reached, a small sample (about one-half ounce) of the liquid is put into a test-tube, and a small lump of starch added, after which it is shaken until the latter is thoroughly distributed through the liquid. The starch will keep the finely divided precipitate from passing through the filter. The mixture is thrown on a filter, the first portions (as long as they appear to have a greenish tint) returned to the filter, until the liquid runs off clear, and without greenish or bluish tint. If it has either of the latter, a little more solution of ferrocyanide must be added to the original liquid and the test repeated. If the filtrate has a yellowsih tint, it should be tested with a drop of a *very* dilute solution of chloride of iron (one part of tincture of iron and fifty parts of water); if it produce a *deep* blue tint or precipitate, too much ferrocyanide was added, and this may be corrected by the cautious addition, in drops, of tincture of iron. Finally, when the filtrate has a very pale-yellowish tint, the operation is completed.

According to the nature of the original liquid and the custom of the trade, it may be necessary to impart a specific color to the liquid, by means of regular liquor-coloring or other substances.

Of course, before using this process upon the whole contents of the cask, we would advise to try it upon a small quantity. We would also recommend to put the restored liquor in glass vessels.

No. 1048.—**Hair Restorer** (Dr. S. & F.).

If you understand by this an agent which will stimulate and promote the growth of hair, so long as the hair-follicles have not lost their vitality, we have no objection to acknowledging that hair-restorers do exist. Only it is impossible to predict the result of any application, nor will the same tonic produce the same effect in every case. The growth of hair is chiefly promoted by paying attention to the following directions:

1. Keep the scalp scrupulously clean, and particularly free from "dandruff."

2. Brush the scalp daily with a moderately stiff brush without using too much friction.

3. Wash the head occasionally with soap and water, to remove fatty substances which have become acid and rancid.

4. Keep the head cool and do not unnecessarily keep it covered, particularly in warm rooms, indoors.

5. Keep the skin of the scalp soft, pliable, and faintly moist—if not naturally so—by the judicious application of some bland substance like vaseline, castor oil, almond oil, etc. (all of which may be suitably perfumed). Some of the following may also be recommended:

1.	Castor oil	8 ounces.
	Alcohol	8 "
	Oil bergamot	q. s.
2.	Glycerin	8 ounces.
	Alcohol	8 "
	Oil lavender	2 drachms.
	" rosemary	1 drachm.
	Sulphate of quinine	60 grains.

Dissolve the sulphate of quinine in the alcohol, add the oils and finally the glycerin.

To stimulate the scalp, a small quantity of tincture of cantharides, about two drachms for the above formula, may be added.

When the hair-follicles (or rather the papilla at the bottom of each follicle) have been destroyed by disease or otherwise, it is impossible to make the hair grow.

No. 1049.—**Hair Dye** (Drs. S. & F.).

Black hair dyes are usually composed of liquids producing, when successively applied to the hair, some black metallic sulphide, as sulphide of lead or sulphide of silver. Those dyes which contain lead are not to be recommended, as their continued use not unfrequently leads to lead-poisoning. Silver dyes are less injurious, although they should likewise be used with caution. Particular care should be taken not to apply any of the metallic solution to the scalp itself.

Silver Hair Dye.

1.	Sulphide of potassium	1½ ounces.
	Solution of potassa	½ ounce.
	Distilled water	8 ounces.
2.	Nitrate of silver	¾ ounce.
	Rose water, distilled	8 ounces.

The hair having been thoroughly washed, it is wetted with the first solution, allowed to dry, again wetted and dried again. Then the second solution is cautiously applied to the hair, not by pouring it on, but by rubbing it into the hair and by combing. If any of the dye comes in contact with the skin, it will stain the latter; the stain, if *fresh*, may be obliterated or prevented by a solution of hyposulphite of sodium.

No. 1050.—**Syrup of Hydriodic Acid** (J. A. A.).

A syrup of the same strength of iodine as that made by Gardner (namely 6.66 grains of iodine, or 40 grains of hydriodic acid in 1 fluid ounce) may be made as follows:

Take of

Iodine	106 grs.
Alcohol	3 fl. oz.
Glycerin	4 fl. oz.
Sugar	13 troy oz.
Distilled water	q.s.

Dissolve the iodine in the alcohol. Mix the glycerin with 5 fl. oz. of distilled water, and add the iodine solution. Pass a current of sulphuretted hydrogen gas through the liquid until all the iodine is converted into hydriodic acid and the liquid has a purely yellowish color, due to separated sulphur. Filter the liquid, returning the first portions, if not clear, back into the filter; then expose it, on a water-bath, to a temperature not exceeding 125° F.,

constantly stirring, until all odor of hydrosulphuric acid has disappeared. Transfer the solution to a bottle, cool it by affusion of cold water, add the sugar and sufficient distilled water to make the syrup, when finished (by agitation), measure 16 fluid ounces.

This syrup is perfectly colorless, and may be kept so by pouring into the bottles, in which it is preserved, a shallow layer of pure olive oil. This keeps out the air absolutely, and the syrup will remain unchanged even when exposed to light. It is best to keep it in small bottles so that the contents, after removal of the oil, may be used up before it has time to spoil.

No. 1051.—**Absorbent Cotton** (W. T. V.).

This may be prepared by depriving cotton of its fatty matter by means of alkalies, or by means of direct solvents.

1. *Slocum's Process* (after *Amer. Journ. of Pharm.*, 1881, February, slightly modified).

	Parts.
Cotton, free from foreign impurities and carded.	10
Solution of soda	300
Chlorinated lime	8
Hydrochloric acid	q. s.
Water, each, a suff. quant.	q. s.

Boil the cotton with 150 parts of solution of soda for half an hour; then remove it, wash it thoroughly with water, and press out the excess of the latter. Agitate the chlorinated lime with 150 parts of water, and having strained the mixture, immerse the cotton in the strained liquid for twenty minutes; then wash it again with water, dip it for a short time in water acidulated with sufficient hydrochloric acid to preserve an acid reaction; again wash it with water, and next boil it again with 150 parts of solution of soda. Wash it, dip it once more in water acidulated with hydrochloric acid, and then wash it with water until the washings cease to be clouded by nitrate of silver. Finally press out the excess of water, dry the cotton quickly, and afterwards pick it or card it into loose masses.

2. Treat loosely carded cotton with (low-boiling) petroleum benzin, either in a well-covered percolator, or in a suitable apparatus where the percolate may be subjected to a continuous heat so as to volatilize the menstruum, and return it constantly, in a condensed form, to the cotton. The latter, after being thoroughly aired, may be subjected, if necessary, to a bleaching process. But great care must be taken that no trace of chemicals is left therein. Finally it should be again carded.

No. 1052.—**Elixir of Calisaya and Iron with Strychnia** (A. Th.).

You will find formula on page 21 of our last January number.

No. 1053.—**Niemeyer's or Heim's Pill** (F. L. J.)

The formula, as usually followed, is this:

℞ Pulv. digitalis	gr. 20
Pulv. ipecacuanhæ	gr. 5
Pulv. opii	gr. 5
[Quiniæ sulphatis	gr. 20]
Ext. helenii (= Inulæ)	q. s.

Make 20 pills

The sulphate of quinine is added in cases where there are febrile paroxysms. Sometimes the ingredients are quoted by authors in different proportions.

Heim's (born 1747, died 1834) original formula was:

Pulv. digitalis	gr. 10
Pulv. ipecacuanhæ.	gr. 10
Opii	gr. 5 (to 6)
Ext. Inulæ	gr. 60

Make 40 pills. *Dose:* 1 every three hours.

The journal you quote from misprinted the "Extractum Helenii" into "Extractum Helesii."

No. 1054.—**Incompatible Prescription** (T. F. H.).

A southern correspondent sends us the following prescription, and states that the tinctures and wine were added to the powdered iodide of potassium in the bottle, and no change took place until the spirit of nitre was added, when slight effervescence took place and the mixture assumed a dark color, like tincture of iodine.

℞ Tr. araliæ spinosæ,	
Tr. phytolaccæ decandræ,	
Vin. colchici,	
Spir. æther. nitrosi	āā ʒ iiss.
Potassii iodidi	ʒ x.
Aquæ dest	q. s. ad fl. ʒ xvi.

The change which takes place is simply owing to the fact that the spirit of nitrous ether is acid. When freshly made and carefully rectified it is neutral, but on keeping it becomes more or less acid. And nitrous acid energetically attacks iodides, setting free the iodine. To prevent this, it is necessary to neutralize the free acid in the spirit, before it comes in contact with the iodide, by means of an alkali, say bicarbonate of potassium or solution of potassa. It is better to have a faint excess of alkali rather than of acid. But the alkali must *not* be added *after* the iodine has been set free by an acid spirit of nitre, because an alkali with free iodine forms not only iodide, but also iodate of potassium, which latter is a poisonous salt.

No. 1055.—**Colors for Show Bottles** (S. & F.).

The following are suitable mixtures for the colors you want:

Blue.—Dissolve four ounces of sulphate of copper in two pints of water containing one ounce of sulphuric acid, and filter.

Or, dissolve Prussian blue in hydrochloric acid, or in solution of oxalic acid; add water until the proper shade is produced, and filter.

Red.—Dissolve carmine in water of ammonia and dilute with water to the desired shade. About one-half drachm of carmine will be required for one quart.

Orange-Red.—Dissolve bichromate of potassium in water and add for every pound of the salt four ounces of sulphuric acid. Filter the solution through absorbent cotton.

Green.—Dissolve four ounces of sulphate of copper in one quart of water, then add sufficient bichromate of potassium to render the liquid green (about five drachms). Filter.

Or, dissolve metallic nickel one ounce in nitric acid diluted with twice its weight of water, add water to make one gallon and filter.

Blue, red, and green aniline colors may be used. They do not, however, long resist the action of light, and have to be renewed from time to time.

The solutions should always contain a little alcohol, if possible up to one-quarter or one-fifth the volume. This prevents the solutions from freezing under ordinary circumstances. The addition of glycerin is also advantageous.

Nos. 1056 and 1057.—**Formula Wanted.**

One of our correspondents asks for the composition of "Warner's Safe Kidney and Liver Cure." Some of our readers may be able to supply the same.

Another asks for the formula of "Russell's Tic-Sano," a proprietary specific for rheumatism, neuralgia, gout, etc., sold in England.

Nitro-Glycerin in Puerperal Convulsions.

In the *British Medical Journal* of April 22d, Dr. W. E. Green, of the Isle of Wight, reports a case of puerperal convulsions in which, following the artificial completion of labor, the patient remained comatose and with a pulse indicative of exaggerated arterial tension; the patient improved rapidly under the administration of nitro-glycerin, given by adding eight minims of a one-per-cent solution to an ounce of water, of which teaspoonful doses were given every hour. The first dose was administered two and a half hours after the commencement of the attack, and within ten minutes consciousness was regained. Four or five doses in all were given. The patient recovered slowly under other treatment, but had no return of convulsions.

ITEMS.

The New York State Pharmaceutical Association will hold its fourth annual meeting at Albany, on Tuesday and Wednesday, the 20th and 21st of June. The meeting will be called to order at 10.30 A.M., on the 20th. The Local Secretary, Mr. C. H. Gans, has secured the State Agricultural Hall (State Street cor. Lodge), for the meeting, and the pharmacists of the city have cheerfully united with him, in efforts to make the occasion one of interest and pleasure to all.

Members who have prepared papers in reply to queries, or who have volunteer papers, are requested to send them to the chairman of the Executive Committee, Willet L. Brown, Syracuse, on or before the 17th, or present them to that committee at the meeting. An exhibition of drugs, chemicals, pharmaceutical preparations, apparatus, and other objects of interest, will be held in the same building.

A. B. HUESTED,
President.

The Pennsylvania Pharmaceutical Association.—The fifth annual meeting of the Association will be held in the Opera House, Altoona, commencing at 10 o'clock A M., Tuesday, June 13th, and continuing through the following day. Orders for excursion tickets on the railroads leading to the place of meeting can be obtained from the Secretary, J. A. Miller, Harrisburg, Pa.

A number of manufacturers of chemicals and pharmaceutical preparations have already secured space in the room for the exhibition. All who desire to place their goods in the exhibition will please notify C. F. Randolph, Assistant Secretary, Altoona, as early as possible. The headquarters of the Association will be at the Logan House, where the members and their families will be entertained at reduced rates.

Members, and those wishing to become members of the Association, are urged to attend this meeting Besides other important matters, the adoption of the proposed pharmacy bill will be considered. GEO. A. KELLY.
President.

Louisiana State Pharmaceutical Association.—As a result of the call referred to in our last number, one hundred and six pharmacists met at New Orleans on the 24th of April and organized a State association, with the following officers:

Dr. Jos. T. Thibodeaux, *President;* Alex. K. Finlay, *First Vice-President;* Dr. F. M. Brooks, *Second Vice-President;* Hiland Flowers, *Recording Secretary;* Ben. Lewis, *Corresponding Secretary;* Jno. B. Lavigne, *Treasurer;* Messrs. R. N. Girling, *Chairman*, F. Gouanx, E. G. Wunderlich, S. Hiriart, and John Johnson, *Executive Committee.*

The following gentlemen were appointed, on the second day of the session, as a *Committee of Legislation:* Messrs. G. S. Mattingly, Eric Brand, and O. Robin, of New Orleans; Dr. F. M. Brooks, Baton Rouge; and J. A. Lee, New Iberia. They were to meet May 15th, and were recommended to take the Wisconsin law as a guide.

It was resolved to hold the next meeting at New Orleans the first Monday in April, 1883, and that the American Pharmaceutical Association be invited to meet next year in New Orleans.

The following delegates and alternates to the American Association were appointed: *Delegates*—Messrs. I. L. Lyons, Hiland Flowers, B. Tuma, C. L. Keppler, and S. Hiriart. *Alternates*—Messrs. R. N. Girling, St. Cyr Fourcade, Eric Brand, Dr. F. M. Brooks, and M. P. Young.

The following committees were appointed:

On Trade Interests—Messrs. St. Cyr Fourcade, *Chairman;* Wm. C. Harrison, of New Orleans, and E. N. Roth, of Lafourche.

On Papers and Queries—Messrs. F. C. Godbold, *Chairman;* B. Tuma, of New Orleans, and R. A. Kearney, of Iberville.

On Adulteration and Deterioration of Drugs—Messrs. John Johnson, *Chairman;* Hiland Flowers, and R. N. Girling, all of New Orleans.

Mrs. E. Rudolph, the only lady pharmacist in the State, was elected a member, and the following, honorary members: Prof. J. M. Maisch and Mr. Alonzo Robbins, Philadelphia, and Prof. P. W. Bedford, New York.

The St. Joseph (Mo.) Pharmaceutical Association, recently organized, has elected the following officers: *President,* William Striblen; *Vice-President,* Thomas H. Elfred; *Secretary,* Eugene Spon; *Treasurer,* George E. Coulter.

Regular meetings are held on the first and third Tuesday evenings of each month, at the St. Joseph Hospital Medical College.

Indiana Pharmaceutical Association.—This should have been the heading of the notice given of the meeting of organization, in our last number, page 159, instead of "Indianapolis Pharmaceutical Association."

Massachusetts College of Pharmacy.—We find in the *Boston Post* an account of a dinner given on the 12th of May by the Trustees of the Massachusetts College of Pharmacy to the graduating class and a few invited guests. To judge from the reporter's account, in brief, of the speeches, the entertainment was of the most enjoyable character

California College of Pharmacy.—The lectures in this college, which constitutes the Pharmacy Department of the University of California, have recently commenced. This year opens auspiciously, with an increase in membership of twenty-five per cent over last season, the class now numbering about one hundred students. The opening address was delivered by E. W. Runyon, lately chosen to the Chair of Professor in Pharmacy, made vacant by the resignation of Professor Emlen Painter.

PHARM. CALENDAR FOR JUNE.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Thurs. 1st.	New York Coll. Pharm.—Trustees' Meet.
	Louisville Coll. Pharm.—Pharm. Meet.
	Massachusetts Coll. Pharm.—Trustees' M.
Frid. 2d.	American Chem. Soc.—Monthly Meet.
Mon. 5th.	Erie Co. Pharm. Asso.—Month. M. at Buffalo.
Tues. 6th.	Philadelphia Coll. Pharm.—Trustees' M.
	Maryland Coll. Pharm.—Trustees' M.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Thurs. 8th.	Newark Pharm. Asso.—Monthly Meet.
	Louisville Coll. Pharm.—Direct. Meet.
	Philadelphia Coll. Pharm.—Alumni Ph. M.
	Maryland Coll. Pharm.—Meet.
	New York German Apoth. Soc.—Monthly M.
Tues. 13th.	New York State Pharm. Assoc —Annual M. at Albany.
	Pittsburg Coll. Pharm.—Trust. M.
	Pharm. Assoc. for the Province of Quebec.—Annual Meet. at Quebec.
	Pennsylvania Pharm. Assoc.—Annual Meet. at Altoona.
	Kings Co. Pharm. Asso.—Monthly Meet. at Brooklyn.
	Chicago Coll. Pharm.—Trust. M.
Wed. 14th.	Board of Pharmacy, New York.—Monthly Meet.
	New York Coll. Pharm.—Alumni Meet.
Tues. 20th.	St. Louis Coll. Pharm.—Trust. & Alumni M.
	Philadelphia Coll. Pharm.—Pharm. Meet.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Mon. 26th.	Philadelphia Coll. Pharm.—Stated Meet.
Tues. 27th.	Boston Druggists' Assoc.—Meet.
Thurs. 29th.	Kings Co. Board of Pharm.—M. at Brooklyn.